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Established 1835 — Railway & Commercial Gazette

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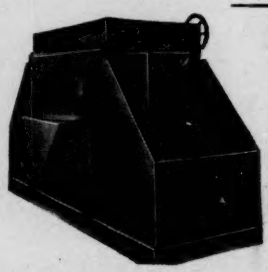

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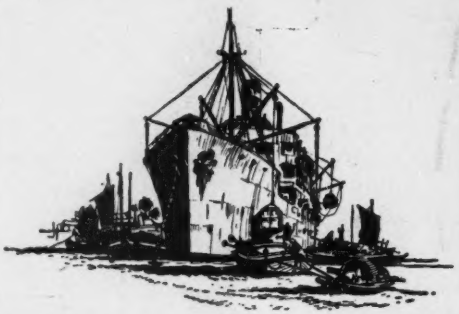

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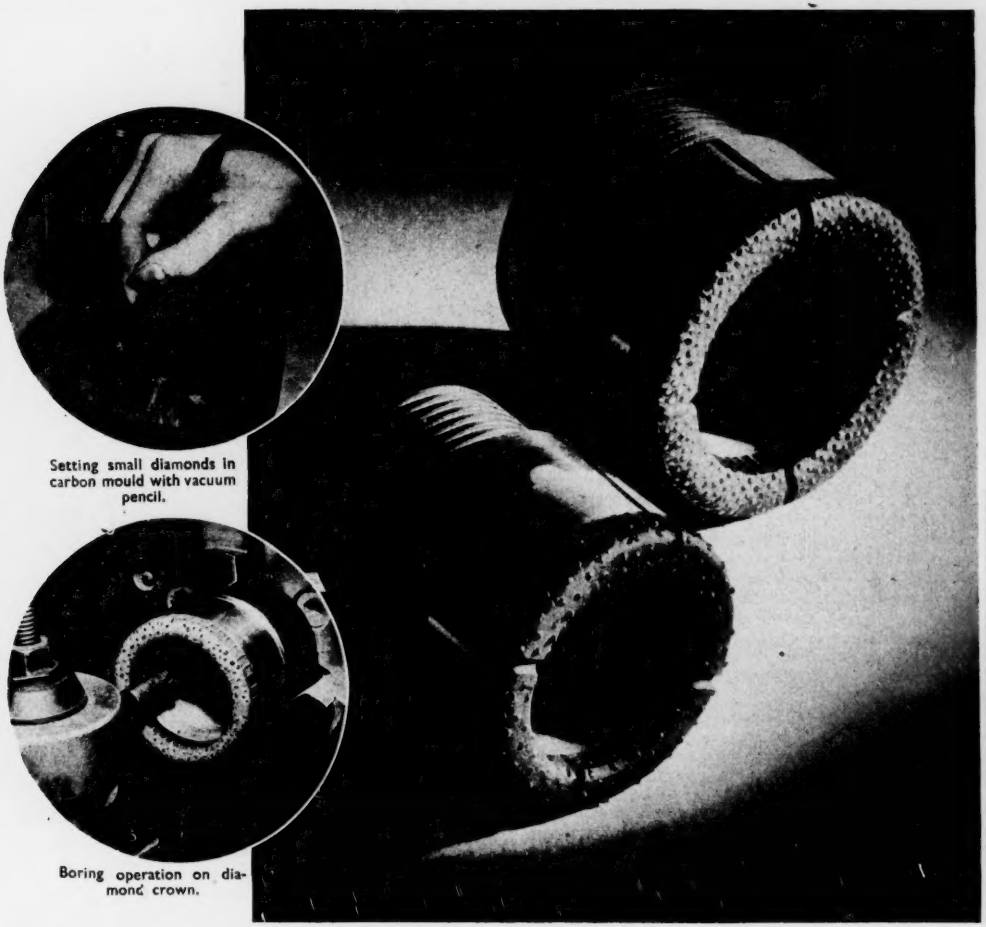

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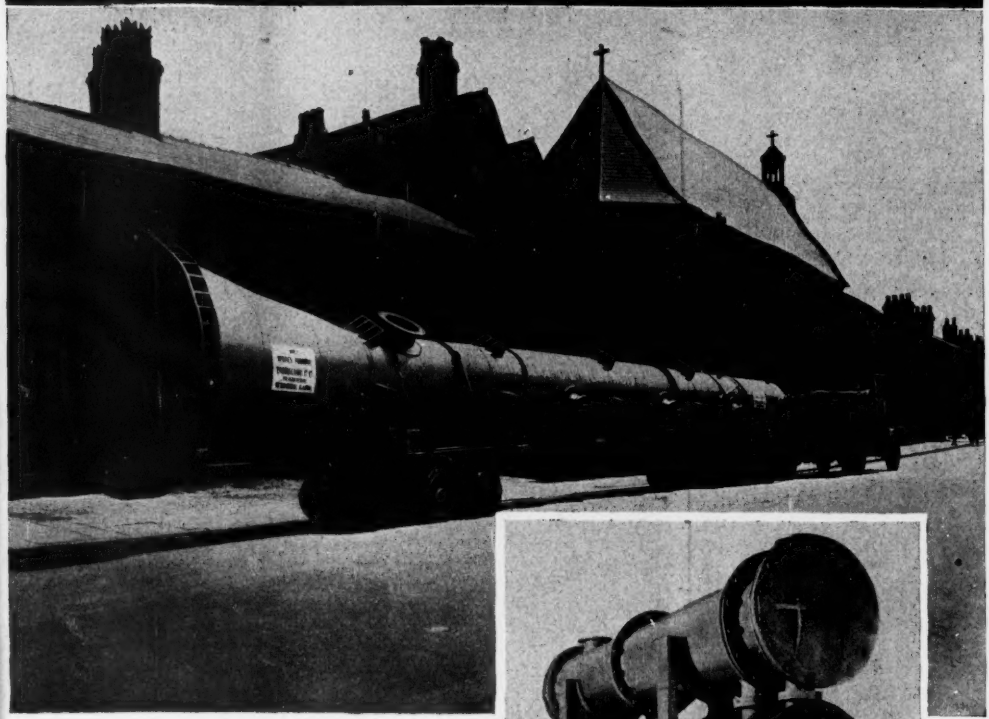

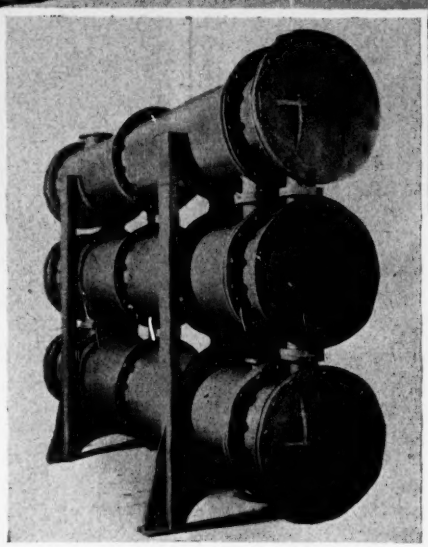

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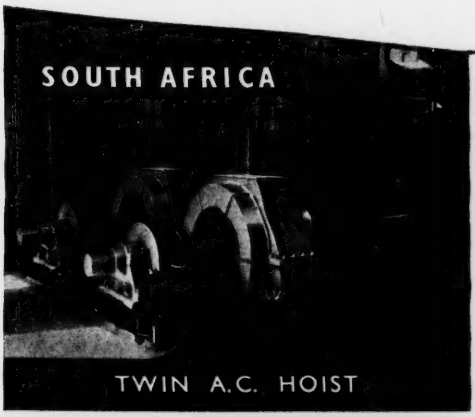

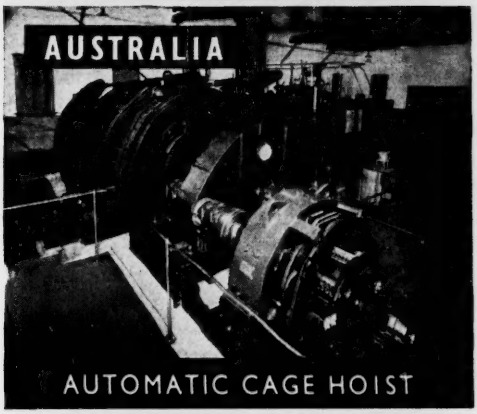

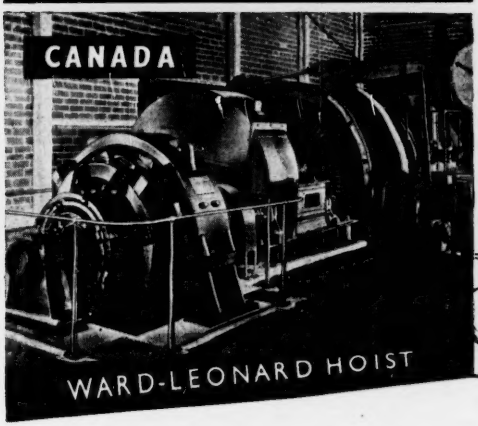

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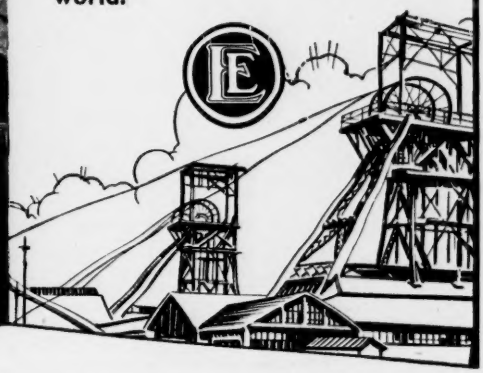

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NOTES AND COMMENTS

The Bankers' View of 1950

The bankers' addresses this year have once more focused attention soberly and thoughtfully on events both internally and externally over the past twelve months. Lord Aldenham, chairman of the Westminster Bank, Sir William Goodenough, chairman of Barclays Bank and the Marquess of Linlithgow, chairman of the Midland Bank, all remind us that even before the new defence programme was drawn up, inflationary forces had not been decisively arrested, and that the prime cause of anxiety in any view of the immediate future as Lord Linlithgow pointed out, is the "continuance, and perhaps intensification of inflationary pressure." On this point, Lord Aldenham nicely summed up the whole position of the country when he stated "that the standard of living in the future must be set by reference to the cost of production index rather than to the cost of living index. It will, in fact, be so set," he added "whether we wish it or not."

In the wider field of national affairs the Westminster Bank chairman gave it as his view that the two outstanding developments during 1950 which most affected economic progress were the Korean war and the marked increase in the gold and dollar reserves of the sterling area.

The outbreak of war in Korea, indicating as it does that the cold-war may at any time warm up to a real one, has brought about the speeding up of the defence programmes of all freedom loving nations, but the necessary leaway to be made up in this respect cannot be accomplished without greatly adding to this country's economic difficulties.

The second outstanding development to which he referred was the vast improvement in the gold and dollar reserve of the sterling area which enabled the Governments of the United States and the United Kingdom to agree to the suspension of Marshall Aid before its course had been fully run. After paying tribute to the United States for their generous assistance to the nations of Western Europe, Lord Aldenham showed how Marshall Aid dollars had been the means whereby international trade has been freed of many of the fetters which bound it. Marshall Aid dollars, he said, "supplied an international medium of payment permitting the resumption on a considerable scale of multilateral trade, which had been crippled by payments difficulties; they provided a backing for sterling, which was able to resume something of its former role as an international currency; and they permitted a considerable expansion of European trade through schemes for intra-European payments, of which the European Payments Union is the latest."

While Lord Linlithgow and Sir William Goodenough both concerned on these points, Lord Linlithgow carried this theme a step further when he declared that it was important for this country to rely as little as possible on American aid for rearmament, or for anything else, partly because such dependence would be enervating to this country and partly because "concentrated dependence—whether direct, as in terms of imperialism, or indirect as in present circumstances—upon a single political and economic power is basically unhealthy, however strong and consistently far-sighted and benevolent that power may be." For the achievement of a healthy state of independence he prescribed two remedies—strengthening the economic foundations of the British Commonwealth, and sustained efforts to maintain the sterling areas dollar revenue at the highest level possible.

Nevertheless, all three chairmen make it quite clear that much of the gain in the sterling areas position as a whole and in our own situation was due to exceptional factors, and that the appearance of surplus did not mean that economic recovery was at hand. Indeed, Lord Aldenham warns that despite the genuine progress made in 1950, the exceptional factors which have once again created "sellers" markets have merely postponed, and not averted, "the real test of our ability to earn our living in a competitive world."

U.S. Antimony Situation

Antimony is at present in very tight supply with domestic price f.o.b. Laredo, Texas, 42c. in bulk—a rise of 10c. in a week, reports Reuter from New York. This condition reflects the ever-increasing demand because of needs of the defence programme, as well as the tight ore situation. Although use of antimony will be affected by the 20 per cent cut in automobile production, defence needs will more than take up the slack. Tank production as well as the high demand for antimony oxide for metal coating, will easily cover any losses resulting from reduced needs for storage batteries for automobiles.

Foreign antimony, such as Belgian, English, and Yugoslav, is difficult to obtain. Imports of Chinese antimony, which up to the Korean war were coming here in good quantities, have since been halted and the very tight position, coupled with heavy demand, has pointed to a price increase. With the situation in antimony as it is,

however, it is very probable that some way will be found to stimulate higher ore production, either by price boosts or a form of subsidy.

Ore from Mexico is the greatest source of U.S. antimony production and to increase the supply of ore it will be necessary to work low grade mines. This may mean Government subsidy, as has already been done to boost production of low grade copper and lead ores. The outlook for increased shipments of foreign material is dim, as the expected sharply accentuated defence production in Europe will probably require most, or all, of European production. Shipments of Chinese antimony will certainly not be resumed unless there is a complete change in the international atmosphere.

Therefore, on the basis of constantly tightening supply and ever-increasing demand, the price trend of antimony will be on the upgrade unless the Government adopts some form of subsidy to encourage increased production from low grade antimony ores.

Queensland Mining

The recently published Jubilee number of the *Queensland Government Mining Journal*, testifies to the long and momentous mining history of the State, during which an enormous number of companies and syndicates have operated and passed on. But like so many other older fields, production to-day is largely the function of two major producers. Tin mining reached its zenith in 1873 with an output of 8,938 tons of concentrates. Gold achieved its maximum in 1900 with an output of 676,027 f.oz. Copper's best year was in 1913 with 23,655 tons. Lead achieved its highest figure in 1932 with 47,715 tons. Wolfram, of which Queensland was at one time an important producer, made its record output in 1904 with a total of 1,539 tons of concentrates. Coal alone has shown, on balance, an advancing tendency, with the year under review recording the best output, though only of the modest size of 1,970,388 tons. While it is claimed "that the prospects for the discovery of additional large ore bodies are perhaps brighter in Queensland than in any other state in Australia," failure to produce any new mine since Mount Isa in 1923 is sufficient warning against too much optimism in this respect.

Turning to examine the various principal items of mining production last year, we have the following particulars from the Annual Report of the Secretary of Mines, recently received.

Gold—The output last year was 76,282 f.oz. against 69,646 f.oz. in 1948. In 1902 Mr. J. H. Curle pronounced Mount Morgan to be the greatest gold mine in the world, and last year it supplied 59,162 f.oz. of the total production. Golden Plateau (Cracow) came next with 7,024 f.oz. and Black Jack, the sole survivor of the great Charters Towers chain of mines, contributed 2,454 f.oz.

Lead-Zinc-Silver—The other mainstay of Queensland Mining is Mount Isa, which was responsible for the whole lead production of the State, amounting to 37,697 tons, as well as 21,241 tons of zinc and 2,468,508 oz. of silver.

Copper—Production of copper last year totalled 4,924 tons, of which 3,711 tons came from the Mount Morgan smelter, some of it being custom ore. However, when the new Mount Isa smelter and treatment plant is completed, copper production should be much stimulated, and this is expected to be towards the end of 1951.

Tin—Production of tin was 736 tons, better than in 1948 but considerably below the 1947 figure. The only substantial producer was the Table Land Tin Dredging Co., working a bucket dredge on Return Creek, Mount Garnet, which produced 689 tons of concentrates, from 4,308,000 cu. yd. treated. The improvement in the yield was due to a return to normal in working conditions.

Pakistan

(From Our Own Correspondent)

Colombo, January 6

Considerable development in the mining industry in Pakistan has been reported in a survey made by the Ministry of Industries, Government of Pakistan. Among the most important minerals which are being worked in Pakistan at present are coal, petroleum, chromite, gypsum, limestone and fireclay.

Petroleum.—The production of crude oil in the first half of 1950 was 539,493 bbl. as against 823,550 and 425,553 bbl. for the whole of 1949 and 1948 respectively. Of the present output, 338,868 bbl. were produced by Messrs. Attock Oil Co. Ltd., from the oilfields in Attock and Jhelum districts, and 200,625 bbl. by Messrs. Burmah Oil Co. Ltd., from their Chakwal well at Jhelum district, all in the Punjab.

Coal.—An increase in the production of indigenous coal has resulted from the implementation of the recommendations of Messrs. Powell Duffryn Technical Services Ltd. The production during the first six months of 1950 was 243,936 tons—121,123 tons from Baluchistan, 116,846 tons from the Punjab, 4,135 tons from the North-West Frontier Province, and 1,832 tons from Sind. This compares with 331,964 tons for the whole of 1949 and 240,777 tons in 1948. The average monthly production of coal during 1948, 1949 and the first six months of 1950, was thus, 20,065 tons, 27,664 tons and 40,656 tons respectively.

Chromite.—Pakistan has the second largest high-grade chromite deposits in the world. This mineral is essential for making ferro-chromium and other special steels required for projectiles, gun lining, armour plates, high speed tools, springs, etc. Its output during the first six months of 1950 was 9,000 tons against 15,673 tons and 17,873 tons in 1949 and 1948 respectively.

Gypsum.—Gypsum is found in abundance in Pakistan. It is a valuable soft mineral which is used in the manufacture of special cement, fire-proof wall boards, sulphuric acid, calcium sulphate and fertilizers. Production during the first six months of 1950 was 9,422 tons. In 1949, the output was 15,645 tons.

Limestone.—Limestone feeds the lime industry as well as the cement industry of Pakistan. It is also used for the manufacture of chalk for glass melting and for the preparation of calcium carbide. Pakistan's output during the first half of 1950 was approximately 149,914 tons. In 1949, the output was 278,827 tons. The main producers and consumers are cement factories.

Fireclay.—The only source of supply of fireclay in Pakistan has, so far, been the Ratucha Mine, worked by Messrs. Shafiq and Co., of Lahore. During the first six months of 1950, 300 tons were produced compared to 450 tons for the whole of 1949.

Mica.—The operations of the Geological Survey of Pakistan have resulted in the discovery of mica at three places in Chitral. Investigations on the alluvial gold of Chitral are also in progress in the laboratories of the Geological Survey. Mica is expected to play an important part in the industrialization of Pakistan if the commercial exploitation of this mineral is successful.

Uranium.—A search for uranium will shortly be undertaken in the Gilgit region and the Hindukush ranges in Baluchistan. This was announced in Karachi by Khan Bahadur H. M. Habibullah, a leading industrialist and Vice-President of the World Federation of the United Nations Associations. A four-man expeditionary force is to be the spearhead of the uranium search in Pakistan's far-flung mountain ranges. This force will consist of Mr. H. M. Habibullah, his two mining experts and an expert of the Pakistan Geological Survey.

Southern Rhodesia's Industrialization—I

By A. GRAHAM THOMSON

The pattern of industrialization in Southern Rhodesia has been taking shape at a remarkable speed since the war. In this article, Mr. Graham Thomson discusses the outstanding developments in the opening up of the country's mineral resources, in its production of steel and in the consequent establishment of its manufacturing industries. The economic implications of this rapid expansion for the whole of Central and Southern Africa will be considered in a subsequent article.

The tempo of industrial expansion in Southern Rhodesia is so rapid that this progressive and flourishing part of the Commonwealth is clearly destined to play a leading part in the economic development of South-Central Africa.

Formerly, the country's economy was based predominantly on gold. However, throughout the war, a progressive decline in the value of the gold output was accompanied by a steep rise in the production of base minerals. The value of the mineral output was *£10,187,500* for the first nine months of 1950, of which gold accounted for only £4,755,948—thus, base minerals have displaced gold as the Colony's largest single source of wealth. The value of the total mineral output is exceeded only by the proceeds of tobacco cultivation. At present, the country's mineral resources are mainly exported in their raw state for refining overseas, but increasing attention is being devoted to the possibilities of local processing. Since the end of the war, there has been a steady increase in the volume of industrial output; in 1948, the net output of industry—*i.e.*, the value of the production, less the materials used in production—exceeded £17,000,000, the value of exports of secondary industries exceeded £5,000,000, and employment was given to nearly 12,000 Europeans and more than 72,000 Africans. The gross value of output was nearly £24,000,000 for factory production and more than £13,000,000 for other industries.

Quantitatively, Southern Rhodesia's industries are dwarfed by those of South Africa, employing nearly 700,000 men and women, including some 200,000 Europeans, with a net annual output of roundly £200,000,000. It must be borne in mind, however, that at the end of 1946, Southern Rhodesia had a total population of only 1,764,000, of whom 82,382 were Europeans, the corresponding figures for South Africa being 11,391,949 and 2,372,690, respectively.

MORE ROOM FOR IMMIGRANTS

Southern Rhodesia's white population is increasing at the rate of thousands annually. In fact, Mr. J. M. Greenfield, Rhodesian Minister of Internal Affairs, said recently that the rate of expansion and immigration might have to be slowed down; yet Dr. Walter C. Lowdermilk, the eminent American soil scientist, sees no reason why Southern Rhodesia should not carry a European population of several millions. Though the tempo of immigration must be limited by practical considerations, this ideal may ultimately be achieved. Immigration, which is creating new opportunities for further immigrants, has already resulted in increased spending power of the African population. The welfare of African employees has always received special consideration from the Government. For example, when it was decided, following devaluation, to revert to a free economy, each industry was left to work out its own problems of wage increases to meet rising living costs, except where the African was concerned. It was estimated that as a result of the changed policy the African's food and living would cost about 5s. a month more than before devaluation. Following urgent meetings between the Minister of Native Affairs and the big employers, it was agreed that the ration allowances of Africans should be increased by this amount.

In view of its small population, Southern Rhodesia has inevitably lagged behind the Union in the establishment of secondary industries; yet it is significant that employment in secondary industries trebled in the decade 1938 to 1948, the value of the materials used increased nearly sixfold and the value of output rose by nearly 500 per cent.

Basic to the development of secondary industries is the production of iron and steel. The original plant of the Rhodesian Iron and Steel Commission at Bulawayo consisted of an electric furnace and 10 in. and 12 in. rolling mills. These mills produced mild steel sections and a small foundry turned out crusher jaws, tube mill liners and other mining requirements. Subsequently, the production of hexagon drill steel was undertaken and since the opening of the Commission's works at Que Que, in the Midlands, the range of manufactures has been extended further.

EXPANSION AT QUE QUE

The operations of the Rhodesian Iron and Steel Commission have been unsuccessful commercially, the present annual loss being in the vicinity of £70,000. In accordance with the report of Messrs. John Miles & Partners Ltd., consultants to the Rhodesian Government, it was decided recently to increase the annual production of the Que Que plant from 33,000 to 109,000 tons of finished steel products per annum, involving an investment of £11,000,000. It is anticipated that the scheme will convert the existing loss into an annual profit of about £2,500,000. This project is scheduled for completion within three years, including houses, schools, hospitals, dams, etc.

The Que Que expansion scheme is of great importance: total population of the new steel town, known as Redcliffe, will be 2,000 Europeans and 10,000 Africans, and increased steel production will stimulate other industrial development and create new demands for transport, power and water. In fact, the Southern Rhodesian Midlands, comprising the Que Que, Gwelo and Selukwe districts, have been described as the "Ruhr of Tropical Africa." In addition to the extension of the steelworks, it will be necessary to consider the expansion of the transport-carrying capacity of the Rhodesian railways the construction of a new dam in the Que Que area, and the provision of Government institutions and services for the additional population. A co-ordinated programme of re-organization and development has, therefore, been prepared.

The Rhodesian Iron and Steel Commission was appointed to make steel available to manufacturers at a reasonable price. A result of this policy was the opening, in 1949, of the first factory to use steel made from Rhodesian ores, namely, a steel tube works started by Stewarts & Lloyds of South Africa, Ltd., who, just 21 years ago, had established a similar works at Vereeniging, Transvaal. Initial production at Que Que was confined to the manufacture of standard screwed and socketed tubes, but additional plant is under construction to manufacture various tubulars and specials necessary to complete the range of products essential to Rhodesian industry.

Another important post-war development was a link-up between John Brown & Co. Ltd., and one of Southern Rhodesia's oldest engineering firms, F. Issels & Son Ltd., which three years ago celebrated the 50th anniversary of its works at Bulawayo.

John Brown & Co. Ltd. have further extended their Rhodesian interests by sponsoring the formation of

Rhodesian Alloys, Ltd., with an authorized capital of £1,000,000. Apart from the sponsoring company, the issued capital was subscribed by the Anglo American Corporation of South Africa, and the British South Africa Company. Its plant as Gwelo will, at first, produce ferrochrome from ores from the Midlands district. Construction of this plant is expected to take about 2½ years, the production stage may be reached by the end of 1951.

Other industries based on the processing of Rhodesian ores include the manufacture of asbestos products. A factory was established at Salisbury in 1944 and uses high-grade Shabani asbestos fibre. Its products are very satisfactory and have helped to alleviate the chronic shortage of building materials.

The end of the war found the Rhodesias suffering from a critical cement shortage. An existing producer therefore embarked upon an expansion programme designed to increase the output of its factory by 2,000,000 pockets per annum. In addition, a new cement company was established under an agreement between the Industrial Development Commission of Southern Rhodesia, the Gwelo Land and Minerals Co. and Sir Allan Rose Welsh as trustee for the company. An order for a 100,000 ton per annum cement plant was placed with South African manufacturers. This plant, which is among the most up-to-date in Southern Africa, is now in production. Another industry which has been considerably expanded is the production of building bricks.

Large deposits of kaolin in the vicinity of Salisbury are now being opened up, one of the first uses of this material being the manufacture of fire-proof ceiling board. Assaying 55.5 per cent at the mine, the clay is concentrated by a gravity process to 94.2 per cent. It is then mixed with asbestos waste and cement to form a plaster, which is spread between two sheets of glazed cardboard and allowed to harden. Kaolin reserves are estimated at approximately 500,000,000 tons. Output has been at the rate of 130,000 sq. ft. of ceiling boards monthly, but it was hoped to increase this to 1,000,000 sq. ft. a month by the end of 1950. Associated with the kaolin deposits are some 200,000,000 tons of oxide pigments, for which a ready sale to paint manufacturers is expected.

IMPORTANT OIL-FROM-COAL PROJECT

Of immense economic and strategic importance is Southern Rhodesia's oil-from-coal project. According to expert opinion, motor fuel could be produced at 9½d. per gallon from Wankie coals. This programme has not yet been finalized, but it was significant that Mr. Halsted's visit to London at the beginning of last year coincided with the announcement that the Government of Southern Rhodesia had purchased the greater part of the Wankie Coal Concession for £350,000. The area acquired by the Government has been estimated to contain 2,340,000 tons of coal, which can be easily and cheaply mined. This transaction has, therefore, enabled the Government to guarantee coal supplies for the projected undertaking. Expenditure on this project is likely to be in the vicinity of £15,000,000.

There appear to be favourable prospects for the establishment of a large new colliery in the Sebungwe district, close to the Colony's industrial centres. Following a three-year survey, drilling was started by William Baird & Co., who applied for an exclusive prospecting reservation covering some 250 square miles of the Sebungwe district. These deposits may also be suitable for utilization in connection with the oil-from-coal industry.

Also of major importance to industrial and mining development throughout the Rhodesias is the expansion programme at Wankie Colliery, now under the management of Powell Duffryn Ltd., where extensive mechanization underground is expected to raise the annual output in five years to over 4,500,000 tons.

As regards manufacturing industries, the Colony's growing demand for sugar is resulting in the erection of a new refinery at Salisbury. At Salisbury, a £250,000 fully mechanized factory for the manufacture of granular fertilizers, scheduled for production this year, is nearing completion, and a spinning and weaving factory is being constructed at Umtali for the manufacture of grain bags from locally produced fibre.

A wide range of soft plastic goods is in production at Salisbury, the material being imported from the U.K. It is planned to export many of the products not only to other African countries, but also overseas. The Colony's clothing and blanket manufacturing industries are developing at a very rapid rate, their expansion having been accelerated by the restrictions placed on imports of cloth into the Union.

Other secondary industries whose importance is rapidly increasing include, *inter alia*, furniture, joinery, enamelware and cutlery manufacture. A new margarine factory has been opened at Salisbury, where a whisky distillery and a second brewery are also being established.

MORE POWER TO BE GENERATED

Electric power for the industrial development of the Midlands is available from the Rhodesian Electricity Supply Commission's generating station at Umniati. This undertaking now supplies power to within 17 miles of Salisbury and as far south as Selukwe. Its output is being doubled by the installation of a new turbine costing £250,000. To meet the future demand for electricity, this new mechanized power station can be expanded to six times its present capacity. At Salisbury the pressure of industrialization on existing plant is reflected by a recent decision of the City Council to spend £503,000 on extending its power station.

Most important of all Southern Rhodesia's ambitious schemes is the Kariba Gorge project, which is still under investigation. If it materializes, it will be the largest hydro-electric undertaking in the Southern Hemisphere. The investigations are controlled by the Inter-territorial Hydro-Electric Power Commission set up to examine power possibilities on the Zambesi and Kafue Rivers, by the Central African Council, a body representing the Governments of Northern Rhodesia, Southern Rhodesia and Nyasaland.

This project envisages the construction of a dam nearly 400 ft. high, with storage capacity of 70,000,000 to 90,000,000 acre-feet. Some 1,600 square miles in extent, this reservoir would form a lake about 180 miles long and from 10 to 15 miles wide. The water stored would be sufficient to develop a continuous output of 600,000 to 700,000 kW. continuously, which should be sufficient to meet all the power requirements of both Rhodesias for a considerable time to come.

Another undertaking of major importance, dealt with in the first interim report of the Development Co-ordinating Commission, is the development of the Sabi and Lundi Rivers area, the largest irrigation scheme in Southern Africa. The final report on the economic development of this area, submitted to the Government last year by the consulting engineers, Sir Alexander Gibbs and Partners, provides for the ultimate irrigation and settlement of between 250,000 and 500,000 acres at a provisional cost of £20,000,000. As a first step, the consultants recommend, *inter alia, a* "pilot project" to bring 24,000 acres under irrigation at an estimated cost of £1,000,000. The Sabi Valley is rich and fertile and contains large deposits of coal, iron and limestone as well as abundant phosphates resources.

(*To be continued*)

Continuous Mining Experiment at Bolsover

By W. V. SHEPPARD, B.Sc.

Mr. Sheppard, Area General Manager, No. 1 Area, East Midlands Division, N.C.B., is the person responsible for introducing this form of continuous mining known as the Bolsover experiment. Already the experiment has proved highly successful, and output per manshift has increased at Bolsover on an average of 17 cwt. to 50 cwt., and when the new machines are in operation average output is expected to rise to 80 cwt., which contrasts most favourably with the present national average of 24 cwt. Of itself, this new experiment would be worthy of note, but when considered against the background of the present coal shortage in this country, the results will be watched with great interest. The following paper, which explains in detail the workings of the experiment, was presented on January 18 by the author, at the annual general meeting of the Institution of Mining Engineers, under title "An Experiment in Continuous Longwall Mining at Bolsover Colliery."

The Bolsover System of mining is the production of coal on one, two, or three shifts/24 hr., from an optimum concentration of faces, advancing or retreating rapidly, and utilizing the maximum benefits of natural support for roadways, with a simple transport system to a simple pit-bottom and surface layout.

The Bolsover experiment has, as its objective, an overall output/man-shift at the colliery of four tons. An examination of the desired results revealed the necessity of a revolution in mining technique.

The following desiderata were considered necessary:

1. The application of the Continuous Longwall System of Mining to produce a face productivity of at least twice the present figure of four tons/man.
2. The highest possible concentration of workings with the necessary high rate of development.
3. A simple transport system involving minimum "dead" man-power requirements.
4. Three-shift operation to ensure the best use of the equipment necessary, and to suit the capacity of the coal-preparation plant.
5. A simple and efficient surface layout designed to facilitate three-shift working with maximum economy of man-power.

THE FACE

The underground layout provides for a daily saleable output of 2,700 tons to be won from five working-faces and the necessary development headings. Each working-face is 100 yd. in length, and it is proposed to advance the five faces for a predetermined distance (varying from 400 to 1,000 yd., according to geological and other considerations), and to retreat the intermediate faces, thus achieving the maximum extraction with a minimum number of roadways, all of which have enjoyed natural support. Solid coal protection of roadways and the limitation of face life obviate the necessity of large face rippings and any major roadway repairs. Scouring is also eliminated.

To preserve continuity of output, and to provide for contingencies, two fully equipped spare faces are maintained. These spare faces also provide output replacement when retreat faces are being won out by heading; when output is being transferred from one block to another; to enable gate and rib-side transfer conveyors to be advanced during the normal working week, and to allow the main working-faces to be "rested" for 24 hours during each working week. This is considered desirable to guard against the possibility of major "weighting" on the faces, when they are suddenly halted at the week-end, after an uninterrupted high rate of advance for five days.

Six faces are to be equipped with a Joy Gloster Getter, a bottom-loading face belt-conveyor, with rib-side chain-feed delivery to a bottom-loading gate conveyor feeding on to the main district trunk-conveyor system. Stable-hole equipment is also to be provided. Roof support is by Dowty hydraulic props.

The faces are planned to yield 175 tons/100 yd. length each shift, by two strips of 2 ft. 6 in. depth (the average seam section being 3 ft. 6 in.). Stripping, packing, and ripping proceed simultaneously.

An additional working-face is to be operated by hand-filling continuous methods, for two reasons: (1) To provide a reservoir of man-power to deal with any faulted conditions encountered on the mechanized faces, and (2) to act as a "reservoir" face to cushion the effects of fluctuating attendance.

It was necessary to plan four development headings to be working at one time, and these roadways are driven 12 ft. wide and 8 ft. 6 in. high by extracting the seam and 5 ft. of floor dint. Each heading is equipped with an arcwall coal-cutter mounted on caterpillars, a Joy Loader, and the necessary drilling and conveyor equipment.

Main arterial headings are driven at 80 yd. centres, and face headings are planned to give an additional 80 yd. pillar for the protection of the main arteries. These pillars are extensive enough to be extracted as a final operation.

Roadways throughout are supported by 14 ft. x 6 x 5 in. H-section joists and wooden props.

All faces have unit ventilation, and a quantity of 10,000 c.f.m./100 yd. face is found to be ample.

Overcasts are of special construction. Where the face return crosses the main intake, single or double fabricated steel tubes of 3 ft. dia. are used, and where the face intake crosses the main return, a solid concrete and brick overcast is used with no air-lock connection.

TRANSPORT

Because of the high concentration of output from one district the transport system is simple and consists of five trunk conveyors in tandem, delivering to a loading point 200 yd. from the winding-shaft. The conveyors are of ample capacity to meet the shift output of 900 tons (being 42 and 36 in. units ordered prior to the experiment). The conveyors are run at a speed of 340 f.p.m. and can adequately meet any peak loads.

Sequence control and safe belt protection are provided on all except face conveyors.

At the pit-bottom single-level winding is used with decking, winding six 17 cwt. tubs/cage, at an hourly rate of 45 draws, while on the surface single-level winding with decking is employed, and seven men are engaged on the tub-circuit.

A staff of eight men/shift is available for this job (it should be emphasized that with hydraulic props in use on the faces, and a minimum number of gates, the conveyance of supplies is very small).

Materials are taken up conveyor gates on the return belt of the bottom-belt conveyor.

Pit-bank Man-power/Shift	Pit-bottom Man-power/Shift
1 Banksman.	1 Onsetter.
2 Full Side of Cage.	1 Assistant Onsetter.
1 Top of Full Creeper.	1 Coupling and Clipping on.
1 Tippler Operator.	1 Uncoupling Empties.
1 Bottom of Empty Creeper.	1 Loading Point Control.
1 Top of Empty Creeper.	1 Corporal.
	1 Engine-driver and Empty Tub Attendant.

Coal preparation is simplified by washing all coal below 6 in., a fact made possible with no capital expenditure by operating the present washery at a greatly reduced hourly input.

COAL PREPARATION

Concentration of sizes and qualities has been arranged as follows:

Pre-experiment	inches	Present	inches
Hand-picked ...	+ 6	Hand-picked ...	+ 6
	6 × 3½	Washed	6 × 3
	+ 3½		3 × 2
Washed	3½ × 2		2 × 1
	2 × 1		1 × ½
	1 × ½	Washed Slack ...	½
Washed Slack ... Filter Cake	½	Filter Cake	

Other surface labour has been proportionately reduced to suit the reduced output/shift.

Output/surface worker is estimated to be 13 tons.

The original project was laid out for mechanized coal-getting operations, and was planned to commence on July 24, 1950. Protracted delivery of machines made it necessary to start with hand-filling methods, and to introduce these getting machines as delivery was made.

THE EXPERIMENTAL FACE

In October, 1949, an experimental face, 100 yd. long, was equipped for hand-filling continuous mining for the purpose of determining the factors likely to be encountered with rapid advance.

This experimental face achieved an average weekly advance of 22 yd. (for 15 working-shifts/week) over a period of approximately three months. Advances of 25 yd. were achieved in individual weeks, and the following conclusions were drawn:

Ventilation.—A quantity of 10,000 c.f.m. was adequate for a face 100 yd. long.

Methane tests were made in the face return over 24 hr. periods with the face turning over one, twice, and three times/24 hr., and the following maximum percentages were recorded: Single Shift 0.25 per cent, Double Shift 0.40 per cent, Three Shift 0.54 per cent. Due to the overlapping of all face operations, no marked peaks of gas-emission were noted.

Roof Control.—At the face, Dowty hydraulic props were used, and their advantage in quick setting and withdrawing proved an integral part of the system of working.

It was found that, after a week's rapid and continuous advance, there was a tendency to experience a weighting when the face suddenly halted at the week-end. The solution to this problem was found by resting the face for 24 hr. in mid-week. The further advantage of the mid-week rest has already been referred to.

Gate Roads.—The main- and conveyor-gate road was made by taking a 4 ft. dint, 12 ft. wide, and supported by 12 ft. x 6 x 5 in. R.S. Joists on 8 ft. wooden props, these props being footed on four wire bags filled with small stone to prevent prop breakage. The main-gate dinting was done by a team of four men.

The airway gate was ripped to a height of 6 ft. and a width of 6 ft. by a team of two men. Support was by 5 ft. 6 in. wooden props, and 3 x 3 in x 6 ft. light-section girders.

Both these roadways showed negligible deterioration after a face advance of 260 yd.

Equipment.—The face was equipped with a bottom-loading belt conveyor running on the pavement delivering by a rib-side chain feeding to a bottom-loading gate conveyor. A normal longwall coal-cutter and drilling equipment completed the necessary equipment.

The working of the experimental face proved that this equipment was adequate for the duty required.

The Hand-filling Face Operations.—The following schedule shows the man-power for a 100 yd. face in the Bolsover System:

19 Faceworkers (10 Fillers, 1 Borer, 2 Erectors, 2 Coal-cutter operators, 4 Packers.)
4 Main Gate Dinters.
2 Airway Gate Rippers.
1 Shotfirer.
1 Deputy.
2 Gearhead Attendants.

The planned face performance is:

Output/5 ft. cut/shift ...	175 tons.
Output/24 hr.	525 tons.
Face O.M.S.	6 tons.

All members of the face team act as a unit, and no one man has a specialized job.

The cut and shot coal is filled-off in front of the coal-cutter by all faceworkers. As soon as sufficient coal is cleared, the coal-cutter is jibbed-in and commences cutting along the face behind the faceworkers, who systematically clear the face. When all coal has been cleared, the face-conveyor driving gear is moved over to the new position, together with the tension end, by two men. The remainder of the team throw the belting into the new track, and commence packing and drawing-off operations. Meanwhile, the face conveyor is re-erected and run. The coal-cutter, on reaching the gate end, is turned round, flitted to the corner, and cuts back to the gate end.

Main gate dinters and airway gate rippers work continuously, independent of actual face operations.

It has not been found necessary to pack the face before cutting, as the time interval is so short between the packs being built and the coal-cutter passing.

A typical time study of hand-filling is shown below:

Commenced filling	6.30 a.m.
Coal-cutter jibbed-in	8.15 a.m.
Filling completed	10.15 a.m.
Cutting completed	11.30 a.m.
Packing and drawing-off completed ...	12.30 p.m.
Face ready for filling	1.15 p.m.

The use of the hydraulic prop is an indispensable part of the system, apart from the desirability of this type of prop, for roof control. The mechanical advantages in speed of setting and withdrawal are great.

The rib-side chain arrangement is a desirable part of the system. It enables continuous dinting of the main gate to proceed, thus ensuring elimination of delays and complete disposal of all dinting material into the gate-side packs. Further advantages are that there is a free passage for material supplies to the face, and for gate-conveyor extensions to be made without being part of the face operations. In effect, the gate conveyor becomes a subsidiary trunk conveyor, and wear and tear is reduced to a minimum, thus ensuring greater life of belting and structure.

MECHANIZED EQUIPMENT USED

Waste support and gate-ripping arrangements are similar to the hand-filling operations.

Face equipment consists of a bottom-loading face conveyor with rib-side chain delivery to the gate conveyor, a Sullivan 5.B shortwall coal-cutter in the main gate stable hole, and a longwall A.B. or Samson coal-cutter in the airway gate stable hole.

Electrical switchgear is located in both face gates to allow two-way feed to the Gloster Getter, and to keep stable-hole cutter cables off the run of face.

Two drilling units are supplied, one in each gate road.

The only other equipment on the face is the Gloster Getter cutter-loader. The machine is 13 ft. long by 1 ft. 3 in. wide, by 2 ft. high and consists of three main parts, the driving motor, a 50 h.p. unit, the haulage end with single face-side drum holding 50 yd. of $\frac{5}{8}$ in. haulage-rope. The centre section contains the gearing to drive the cutting-jibs.

There are four cutting members: two undercutting jibs, the lower one being 3 ft. long and giving a 6 in. precut over the solid coal, the upper one being 3 ft. 4 in. long, giving a 10 in. precut. The upper jib is the longer member for two reasons, namely, to allow the top chain to be depressed to cut out the 2 in. fillet of coal left uncut between the jibs, and to give better coal preparation.

The shear jib is at the back of, and at right angles to, the undercutting jibs, and is driven by a shaft from the main frame gearing.

An overcutting jib and hydraulic turret with a range of 10 in. can be fitted to the machine if it is necessary to make an artificial roof parting, as at Bolsover. All chain speeds are 400 f.p.m.

The loading section of the machine consists of a plough blade attached to the machine by tow-bars on the face and gob-side. These tow-bars are fitted with universal joints to accommodate undulations in the floor and to counteract lateral movements of the machine.

All cutting-chains are equipped with the Duplex picks, Mohar tipped to avoid loss of time in pick changing during the reversal operation. The machine is equipped for wet cutting.

To reverse the machine, the plough is detached whilst drawing into the stable hole. Owing to the design of the top undercutting jib (the top plate is depressed on one side to divert the chain to remove the 2 in. fillet of coal between the jibs), it is necessary to change this jib when changing direction. This operation is done by slackening the cutter-chain, and sliding the jib off its post. The shear-jib is then pivoted to its new position. The new top jib is then fitted, the chain coupled up, and the machine is then ready for the return journey. This operation can be achieved in 50 min., during which period the face conveyor is moved over to its new position.

The machine can cut and load at a maximum of 6 f.p.m.

MECHANIZED FACE OPERATIONS

The following schedule shows the man-power for a 100 yd. face in the Bolsover System:

1 Deputy.
2 Gloster Getter Operators.
2 Timberers.
4 Packers.
4 Stable-hole Men.
4 Main Gate Dinters.
2 Airway Gate Rippers.
2 Gearhead Attendants.

Output/2 ft. 6 in. cut ...	87.5 tons.
Output/24 hr.	525 tons.
Estimated Face O.M.S. ...	8.33 tons.

The face has a 10 ft. stable hole at each end, carried at least 7 ft. 6 in. in advance of the face. The entrance to each stable hole is "chamfered" to make an overall width of 12 ft. These stables are manned by two at each end of the face, and the coal is hand-filled on to the face conveyor. A longwall coal-cutter is used in one stable hole as a precautionary measure in case the face should strike a fault and have to resort temporarily to hand-filling.

The face conveyor is laid within 18 in. of the solid coal, and the Gloster Getter passes along the face between the conveyor and the coal, there being no intermediate face-side props to obstruct loading. Support of the roof is by cantilever bars whilst the machine is passing.

The timbering system is extremely close and the arrangement is such that all props and bars are always set and never lie on the floor. When the overcutting turret is employed it is necessary to use swivel bars to give clearance for the turret. No exemption from the Timbering Regulations is required.

Packing of the face proceeds as soon as the Getter has passed, so that the face is completely packed and drawn-off when the machine arrives in the stable hole. Thus, the time of reversal of the machine (50 min.) is available for the face conveyor to be moved over, and gob-side props to be set along the side of the conveyor.

An estimated time study of the mechanized face operations is as follows:

Commenced loading	6.30 a.m.
Completed loading, packing and drawing-off ...	8.30 a.m.
Getter reversed and conveyor moved over... ...	9.20 a.m.
Completed second cut with packing & drawing-off	11.40 a.m.
Getter reversed and conveyor moved over... ...	12.30 p.m.

Stable-hole filling, ripping and dinting proceed during the shift without interruption.

To achieve the above performance the Gloster Getter must have an average rate of travel of 3 f.p.m., including the setting of two haulage derricks.

THE ACHIEVEMENT

This experiment involved a complete revolution in technique from the coal-face to the wagon, and there were of necessity many teething troubles, although the system itself was never at fault.

In future applications of this system of mining there will be no necessity to make an "overnight" reorganization of the colliery. At Bolsover it was essential to effect a sudden change-over because there was to be a heavy redundancy of all grades of man-power, and a serious migration of face men had been adversely affecting the colliery results for some months before the commencement of the experiment.

Future applications may be so planned as to allow a gradual transition to the new system without deflating the pit results, providing the necessary development headings are efficiently progressed. It is estimated that a normal colliery can fully change over to the Bolsover System in about 12 months.

It is too early to forecast the success of full mechanization, as the first six months has been devoted entirely to the full exploitation of hand methods. This has been done to demonstrate the practicability of the system, a system for which a machine must be designed or adapted, and not, as so often has been the case, a system built around a machine of particular design and application.

One outstanding lesson has already been learned, namely, that the machinery manufacturers must supply equipment to suit the demands of new methods and systems, and to the specification of the mining engineer, e.g. the cumbersome conveyor driving-gears, switchgear, and trailing-cables of yesterday are quite unsuitable to meet the greater efficiency of tomorrow.

In view of the rapidly dwindling labour force in the industry, at a time of increasing demand, the Bolsover experiment may be regarded as an opportune contribution towards the goal of increased efficiency, with minimum capital expenditure and maximum speed of implementation, at a moment when the urgency of achieving vastly increased productivity is a challenge to every British mining engineer.

Machinery & Equipment

G.E.C. Activities in 1950

For the second successive year the G.E.C. has exceeded the export target set by the Government and exports have constituted a record both in value and in volume.

For the metalliferous industry the G.E.C. have delivered turbo-generator sets to the Mount Isa Mines, Queensland, and the West Bokaro Mines, India, and numerous turbo-compressors and turbo-blowers are in hand for the

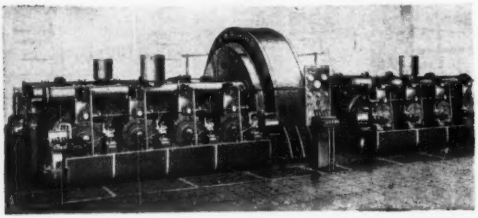


Fig. 1—1,500 kW. engine-driven alternator installed in the power-house of the Bremang Gold Dredging Company

mines in South Africa. Already supplied to, or on order for, Bremang Gold Dredging in the Gold Coast Colony, are engine-driven generators, exceeding 8,000 k.W. capacity. Fig. 1 shows a 1,500 kW. engine-driven alternator installed in Bremang Gold's power-house with the generator centrally disposed between two motor sections, being specially constructed to allow inspection and maintenance of the stator without dismantling the engine.

For the mining of bauxite a new design of hammer-mill has been developed, capable of handling sticky material which would plug an ordinary mill, and one of these mills has been installed to handle wet bauxite in Scotland. A smaller machine of this type is on order for dealing with the difficult Northampton ore. An order for mechanical conveying plant and electrical equipment for a self-unloading bauxite carrier has been received for Reynolds Jamaica Mines, British West Indies.

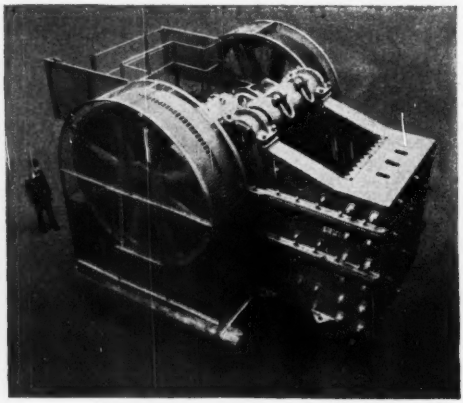


Fig. 2—A sectional Blake crusher specially designed by G.E.C. for New Broken Hill Consolidated

The company has built for New Broken Hill Consolidated of Australia the sectional 60 in. x 48 in. Blake crusher. (Fig. 2). This crusher, specially designed to go down a small mine shaft, breaks a run-of-mine boulders into convenient sizes for hoisting to the surface. For use in the mining industry in New Zealand, a pan-feeder 6 ft. wide x 12 ft. long has been designed to handle large rocks. The pan-feeder's output is 200—500 tons an hour, infinitely variable speed regulation being provided on a constant torque drive. Also a chalk crushing plant has been installed incorporating a new type of finger-bar grizzly feeder capable of handling 70 tons an hour.

A matter affecting the use of germanium in crystal diodes and triodes has been the development of a source of supply in this country. Previously imported from the United States, germanium is now extracted from certain flue dusts by a process evolved by the G.E.C. Research Laboratories in co-operation with Johnson Matthey and Co., Ltd. The element is now commercially available in the form of the metal or its oxide. Germanium rectifiers are now in large-scale production and are replacing thermionic valves in certain positions in television receivers.

Of interest in another field is the research work undertaken by the company into the synthesis of quartz crystals and here, too, satisfactory progress has been made.

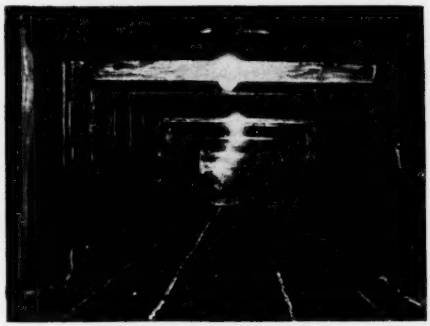


Fig. 3—Half-scale mine roadway model at the G.E.C. Resarch Laboratories, Wembley. Note the impression of length created by the reflections in the mirror at the end, actually only 30 ft. from the entrance

COAL MINING GEAR

Orders have been received from the National Coal Board for two-geared a.c. skip winders for Manvers Main shafts Nos. 1 and 2, the driving motors being 1,500 h.p. and 2,250 h.p., respectively. In each case the new horizontal-type liquid controller will be installed. In connection with the Maerdi reorganization scheme in the South-Western division of the N.C.B., an order has been received for mechanical equipment for a winder, while for the Nantgarw Colliery, in South Wales, a double-drum winder has been put into commission. Also on order for this colliery is a coal preparation plant with a capacity of 350 tons an hour run-of-mine coal, and if the plant were to be extended, output could be increased to 700 tons an hour. The plant will combine the Chance and froth flotation processes. In this connection the G.E.C. has developed a high separating efficiency unit with which small coal up to $\frac{1}{8}$ in. in size can be cleaned successfully.

For service in the Swansea area nine reversible slipring haulage motors aggregating 4,200 h.p. are on order; these motors being arranged for dynamic braking. For the N.C.B.'s West Midlands Division mixed pressure sets driving salient pole alternators have been commissioned. Overseas mining equipment for the first of four 4,200 h.p., a.c. winders for the State Development and Investment

Corporation of South Africa is being erected on site. Each winder is driven by two 2,100 h.p. 6.6 k.V. slipring motors, and the new form of dynamic braking described in the *G.E.C. Journal*, vol. XVI, No. 4, October, 1949, is being employed.

The G.E.C. has already shipped to Austral Bronze Co. (Pty.) Ltd., Sydney, New South Wales, rolling equipment for the 20 in. x 60 in. reversing mill. The main mill motor for this order is rated at 1,000 h.p., 565 volts d.c. plus/minus 0/30/60 r.p.m. and is supplied from an 850 kW. Ward-Leonard Ilgner set.

Finally, reference should be made to the experiments using fluorescent, mercury discharge and filament lamps, carried out by the G.E.C. in conjunction with the National Coal Board for the lighting of collieries. Filament lamps have been incorporated in a new flame-proof unit for coal-face lighting to help solve the problems connected with mine roadway lighting and experimental work is being assisted by the use of a realistic model of a coal-mine roadway recently constructed at the Research Laboratories of the company, at Wembley. (Fig. 3).

The above review of G.E.C. activities refers only to a fraction of the number of orders which the company has on hand or has fulfilled during 1950, and scant attention has been paid to the company's work in connection with the oil industry, welding, switchgear, transformers, etc. Nevertheless, it does serve the purpose of focusing attention on this well-known organization whose contributions to the mining and metallurgical industry have been consistently outstanding.

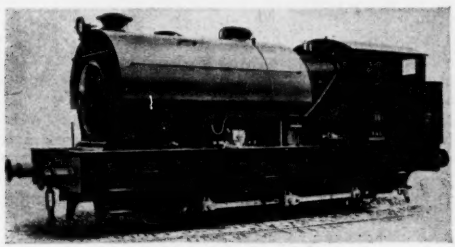
Locomotive for Ironstone Mines

The locomotive here illustrated is one of seven being built by Messrs. Robert Stephenson & Hawthorns Ltd. at their Newcastle-upon-Tyne works to the order of Messrs. Stewarts & Lloyds Minerals Ltd. for work in their Ironstone Mines.

Leading particulars of these locomotives, which have been specially designed to meet the detailed requirements of Messrs. Stewarts & Lloyds Minerals Ltd. who have taken into account experience gained with the many locomotives already in service in their mines, are as follows:—

> Gauge 4 ft. 8½ in.; type 0-6-0; cylinders (inside) 18 x 26 in.; wheels 4 ft. 0½ in.; wheelbase 12 ft. 0 in.; boiler pressure 180 lbs. per sq. in.; heating surface 1,140 sq. ft.; grate area 18 sq. ft.; tractive effort at 85 per cent B.P. 26,574 lbs.; tank capacity 1,100 galls.; bunker capacity 90 cu. ft.; weight in working order 52.75 tons; valve gear "Stephenson."

The locomotive is fitted with steam and hand brakes, standard buffers and drawgear, rail washing cocks and four-bar slidebars. The crank pins, valve gear pins and



Locomotive for Ironstone Mines

spring pins are of nitralloy steel. The leading and intermediate axle springs are compensated. The all-steel boiler has girder stays and a raised outer firebox shell. Fittings include two horizontal No. 8 injectors fitted under the tanks, "Ross" Pop safety valves and a 12-feed mechanical lubricator. The boiler is insulated with magnesia slabs.

"David" Summerson's New Lever Box

A new lever box, manufactured by Thomas Summerson & Sons, of Darlington, enables switches to be thrown with no more effort than closing a door. This new all-steel lever box, to which the name of "David" has been given, is built of forgings, bar-stocks and pressings, the whole being manufactured and assembled on fully jigged production lines. All the component parts are therefore interchangeable and optimum fit is guaranteed. The box can be fitted, without adjustment, to all travels of switches from 2½ in. to 5¼ in. The makers point out that it is

"David" Summerson's New Lever Box

virtually impossible to "gag" the box, which factor, coupled with the high closing pressure exerted on the tongue rail, ensures freedom from "split" switches. For dealing with very heavy spring switches the box can be supplied with tandem springs, which are adjustable to suit the angle of turn-cut. Of special interest, of course, is that the box is light enough to be handled by the arm power of only one man and yet strong enough to cope with the most rigorous demands.

But the appeal of Summerson's new lever box is not to the chief engineer alone, and the maintenance engineer will find that it requires no special maintenance other than normal oiling of the pins—for which no tools are needed—and a periodic greasing of the internal mechanism. Moreover, he will find that the box accommodates itself to "spread" switches and can be removed from the sleepers without upsetting the adjustment of the switches, by the simple action of removing one connector pin, which is readily accessible regardless of the travel of the switches.

No less interest in this new box will be shown by the operator, for when the company designed "David" one of the chief aims was to make a lever box that could be operated easily, swiftly and without the strain and exertion required to actuate the usual spring acting box. That the company have succeeded in producing the means whereby the operator is given relief in his task is confirmed by the fact that "David" is nearly three times easier to operate than the type of spring acting lever boxes generally fitted by railway undertakings both at home and overseas.

Metals, Minerals and Alloys

While activity behind the scenes in regard to international regulation of metal supplies and restrictions on use is obviously proceeding on a great scale, there is little precise in the way of fresh news this week, except in the case of zinc, where the U.S. Munitions Board has announced definitely the suspension of further purchases for the U.S. stockpile, and permission to sell considerable quantities of all grades to the British Ministry of Supply. As copper, with zinc, is required for the manufacture of brass, it is hoped that the principle involved in this decision may eventually embrace copper also. It is possible that it was in the light of earlier knowledge that the Ministry of Supply extended the period when cuts would be imposed on the consuming trades here to the beginning of March. Official activity in America has been turned chiefly towards the control of scrap rather than of primary metals, whose turn is still to come. Great projects are being put in hand in America and Canada to expand the production of aluminium and magnesium, largely by the reactivation of war plants with the assistance of Government finance. An 11-member advisory committee for international allocation of strategic materials has been created by the Mobilization Director, Mr. Charles E. Wilson. President Truman stated that his Government would bring prices and wages under control as rapidly as possible, but he could not yet attempt to fix a date. Meanwhile, plans for carrying out international allocation have been making headway, one of the decisions most anxiously awaited is whether prices will be rolled back to the levels ruling on January 1. Mr. Wilson is credited with the opinion that neither voluntary nor piecemeal controls would be sufficient to stem the inflationary trend. Mr. di Salle, price stabilizer, has recommended that the general price freeze should be on the basis of rolling back all prices to an earlier date, not yet fixed.

Copper.—In the United States the regular sellers of copper, lead and zinc continue to allocate supplies on the previous price levels, and consumers are still trying to build up their inventories; consequently, demand exceeds supply. Otherwise, however, there is little fresh to report. U.K. imports of copper in December were 28,958 tons (16,737 tons electro and 12,221 tons blister). With the exception of Northern Rhodesia, the U.S. was the largest supplier. Total imports for the whole year were 317,949 tons compared with 310,702 tons in 1949. Electro imports are up but blister down.

The Copper Institute gives the total U.S. production of primary crude copper last year as 939,931 s.tons as compared with 772,986 s.tons in 1949, and of secondary crude as 117,182 s.tons compared with 135,052 s.tons. Total production of refined was 1,270,768 s.tons against 1,056,463 s.tons. Deliveries were 1,373,194 s.tons against 1,031,595 s.tons. Production of copper outside the United States (excluding Russia, Japan, Australia, Norway, Sweden and Yugoslavia), is given as 1,347,683 s.tons compared with 1,270,529 s.tons in 1949, with refined totalling 1,127,329 s.tons against 1,076,114 s.tons. Thus, the total world production of refined last year was 2,398,097 s.tons compared with 2,132,577 s.tons in 1949.

Reuter reports from Helsinki, that the Finnish output from Outokumpu this year is estimated at around 18,000 tonnes, of which 10,500 tonnes will be available for export and 7,950 tonnes reserved for domestic consumption. Imports of about 2,000 tons are expected from Belgium.

Two bills have been introduced in the Chilean Congress to establish a National Copper Commission and set export duty to cover difference between "official" prices and the effective purchase price.

Lead.—There is nothing fresh to report with regard to lead. One important seller in New York has opened bookings for February with notification to customers as to what amounts they may expect to receive. While the domestic price seems to be unchanged at 17c., good European buying has been maintained for Mexican lead at 18½c. to 18¾c. f.a.s. Gulf Ports.

Tin.—The market in the United States has been firm this week, and on Wednesday, the record price of 181c. was reported. The Straits price also has tended to be above London and most purchases have been attracted to that market. Latest quotations will be found in our Metal Exchange Correspondent's note below. Malayan output in December was 4,699 tons and the imports of concentrates 1,058 tons (Siam 921 tons, Burma 137 tons).

Production statistics for last year are now fairly complete for all the major producers, with the exception of Bolivia, where the final month (indicated below by an asterisk) is averaged against the other 11. These figures show as follows, in tons:

	1950	1949	+ or —
Malaya	57,537	54,448	+3,089
Indonesia	32,099	28,965	+3,134
Bolivia	30,062*	33,753	—3,691
Congo	14,558	13,760	+798
Nigeria	8,466	8,823	—357
Siam and Burma	9,966	9,598	+368
	152,688	149,347	

The chief gains were in Malaya, Indonesia and Congo. The losses were in Bolivia and Nigeria. In the case of Nigeria, last year's figure represents U.K. imports taken at 72 per cent metal. These figures go far to show that, as we have long surmised, the Tin Study Group earlier estimates of increase in the past have been far too high and, with the stockpiling and enhanced industrial demand, fully explain why tin has become so scarce. Minor producers of tin, never of much account, usually, are on balance, importers not exporters of the metal.

Zinc.—The U.S. Munitions Board told domestic producers last week that the Ministry of Supply was in the market for an undisclosed quantity of American zinc, and that this enquiry had been approved by the White House. At the same time, they confirmed that Government stockpile buying had been suspended, and apparently even the producers in arrear with deliveries for stockpile will be allowed to switch the balance of their contracts to meet British needs. Last week it was reported that the Ministry of Supply had purchased about 12,000 s.tons of all grades of American zinc at the prices quoted by primary sellers to the domestic trade. This is an earnest of the results of the deliberations by the heads of the two governments.

Aluminium. — Following the great expansion of aluminium producing capacity in the United States, Alcan plans to re-open its Beauharnois works in the spring, and has secured the necessary amount of power to operate the plant. Besides the Beauharnois addition, with an estimated capacity of 32,000 tonnes a year, Alcan operates smelters at Shawinigan, Arvida and Isle Maligne, giving a combined capacity in excess of 400,000 tonnes a year. Alcan and the British Columbia Government recently signed an agreement which has long been under negotiation, for the establishment of a new plant in the Western Province, for which a capacity of 1,100,000,000 lb. of metal is assumed. Alcoa, it is announced, is to build a new alumina plant near Bauxite, in Arkansas, adjoining the company's bauxite mines, using a lime soda-Bayer process.

The jealousy of some United States producers towards Canadian interests were further illustrated when the

question of purchasing Canadian aluminium was re-opened before the Celler House Judiciary Sub-Committee. Senator Murray and Mr. Celler urged the rejection of the Canadian offer. It is expected that Mr. N. V. Davis, president of the Aluminum Ltd., will attend the hearings. Mr. Celler criticised the assistance offered by the United States in building Alkan's Shipshaw plant in the last world war. The president of the Reynolds Metal Company, before the House Monopoly Committee, charged that the Canadian company was shipping aluminium to Russian satellite countries, and said that the reports shows that the Aluminium Company of Canada had sent some 5,608 s.tons to China, Poland and Slovakia in the first ten months of 1950. An Ottawa official said that at the time the permits were granted there was no shortage of the metal, but when this developed, the controls were tightened, and no more issued after November.

Magnesium.—The United States Government is determined to greatly increase home production of magnesium. The Dow Chemical Company has acquired the existing plant at Madison, Illinois, to be used for rolling and extruding magnesium by continuous process. The Government-owned plant at Belasco, Texas, formerly operated by Dow, which has been on standby since the last war, is to be rehabilitated and put to work by the same company as soon as possible, and some production is anticipated early in the spring. This plant obtains the raw product from sea-water. In California, the Kaiser Magnesium Company, which operated the Permante Metals plant at Manteca in the last war, will resume operations in July on behalf of the Government; an output of 40,000,000 lb. is scheduled for the next few years. In all, a U.S. production over the next two years of 312,000,000 lb. is aimed at.

Nickel.—The U.S. Administrator of General Services, Mr. Jess Larson, announced last week that the Nicaro nickel plant, operated formerly in the Oriente Province of Cuba, would be reactivated to again produce nickel oxide, probably in about a year's time. A pilot plant is to be started on a new process to produce cobalt as a by-product of the nickel-oxide plant.

A leading N.P.A. official informed the Senate Committee that in a few days' time nickel would be reserved for defence and essential civilian requirements, and its use otherwise banned, owing to the growing scarcity of the metal. The report given in last week's Notes that the International Nickel had applied for a special and exclusive prospective licence over a large area in the Dodoma and Kondoa district of Tanganyika has since been denied by the Governor of the territory.

Tungsten.—The prices realized for wolfram concentrates continue to advance. The U.S. Government buying price last week was raised to $68/$70 per short ton unit. Here the price has further risen and we call it 495s. to 510s. per unit nom. The N.P.A. has placed tungsten under allocation from March 1 next. The N.P.A. Administrator, Mr. W. H. Harrison, said that substantial quantities of tungsten are now being used in the manufacture of high temperature cast alloys for jet propulsion and other military programmes, in addition to normal applications.

The London Metal Market

(From Our Metal Exchange Correspondent)

The last week on the London Metal Exchange has been featureless, with the price of tin fluctuating between very narrow limits, but with a fairly substantial turnover. Home consumers have been active, and demand from the Continent for Straits tin has remained unabated.

In Singapore the demand has remained on a level at which buyers' orders have not been met in full every day, but business between London and Singapore suffers from time to time owing to the deplorable service now given by the cable company, as cables despatched from London in the evening do not always get to Singapore in time for the market, and cables from Singapore have been known not to reach London until after lunch.

In New York demand for fairly prompt material is maintained, but it is extremely difficult to fix contracts with delivery dates beyond the end of February, owing to the uncertainties surrounding the authorities' intention with regard to the control of tin.

On Thursday the official close on the tin market was: Settlement Price £1,255, Cash Buyers £1,255; Sellers £1,260. Three Months' Buyers £1,230, Sellers £1,235. In the afternoon the market was steady. Turnover for the day was 175 tons. Approximate turnover for the week was 970 tons.

The Eastern price on Thursday morning was equivalent to £1,377 10s. per ton c.i.f. Europe.

Iron and Steel

Production of iron and steel has not yet suffered any marked shrinkage owing to the shortage of raw materials. Stocks of fuel, iron ore and scrap have been heavily depleted during the past two months and of course this process cannot go on indefinitely. But vigorous efforts are afoot to cope with the problems arising from the scarcity of iron ore and scrap. Inflated ore freights provide an incentive to step up the output of native iron stone and the shrinkage of foreign scrap supplies has inspired a more vigorous drive to augment the collection of home scrap.

In these matters the steel makers are pursuing a policy of self help. Nor are they inclined to sulk because the Government is relentless on the subject of nationalisation. Sir John James, chairman of the Lancashire Steel Corporation, summarized the prevailing sentiment when he said last week-end: "Whatever the consequences are and whatever penalties are imposed, we must not forget that our duty to our country stands first."

That duty is clearly defined. It is to produce maximum tonnages for the vigorous prosecution of re-armament, the expansion of the export trade, and the nourishment of vital home industries.

There is a good deal of evidence to support the view that users of steel have been buying in excess of their immediate requirements in the belief that supplies will be scarce when the arms drive develops, and that prices will almost certainly advance. Certainly works order books are heavily over loaded and for this reason new business is not easy to place.

There is urgent need of more pig iron to sustain the activity of the foundry trades. Makers of light castings who use high phosphorous iron are not badly situated, but the engineering and speciality foundries who use higher quality pig iron such as low and medium phosphorous, haematite, etc. are in difficulties. More iron and more scrap is badly needed in these establishments.

Re-rollers of bars and light sections have an immense volume of orders in hand both for home delivery and for export, and as imports of Continental steel semis have dropped to almost negligible proportions, they are now largely dependent on British producers for their supplies of billets.

Sheet mills are overwhelmed with orders and have closed their books for the present. Galvanised sheets are almost unobtainable and tube makers have orders in hand which will keep them busy until the autumn at least.

Tinplate.—Production is being firmly maintained at the recently improved level with commitments heavy enough to keep the mills fully employed over the first half of the year. There is no change in the scrap position, the shortage being as acute as ever.

Coal

The Ministry of Fuel's provisional returns for the week ending January 20 confirm the unfavourable impressions of the productivity of the industry under the recently raised wage level, revealed by the returns for the first fortnight of the New Year. It is estimated that the raising of the output of saleable coal by 3,000,000 tons over the four months ending April will need an average additional weekly output of approximately 176,000 tons; but last week's saleable output showed an actual shortage of about 22,000 tons compared with the output of the corresponding week last year. It should be pointed out, however, that the chief cause of shortage was the difference of 85,000 tons in open-cast production; the deep-mined output was actually 63,000 tons more than a year ago. The worse feature of the output statistics is that this general trend has been continuous since Mr. Attlee's scheme was brought into operation, and that for the three weeks ending January 20, the cumulative position already reveals a shortage of 186,000 tons compared with the output in the corresponding period last year.

JANUARY 25 PRICES

COPPER

Electrolytic	£202 0 0 d/d

TIN

(See Metal Notes above for Thursday's Metal Exchange prices

LEAD

Soft foreign, duty paid	£136 0 0 d/d
Soft empire, including secondary lead ...	£136 0 0 d/d
English lead	£137 10 0 d/d

ZINC

G.O.B. spelter, foreign, duty paid ...	£151 0 0 d/d
G.O.B. spelter, domestic	£151 0 0 d/d
Electrolytic and refined zinc	£155 0 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over	£250 per ton
Crude, 10 cwt. and over ...	£195 per ton

NICKEL

99.5% (home trade) ... £406 per ton

OTHER METALS

Aluminium, £124 per ton.	Palladium (scrap), £7 10s. oz.
Bismuth, 17s. lb.	Platinum, £27/33 5s. nom.
Cadmium, 17s. 3d./18s. lb.	Platinum (scrap), £26 nom.
Chromium, 5s. 3d. lb.	Rhodium, £45 oz.
Cobalt, 15s. 6d. lb.	Ruthenium, £25 oz.
Gold, 248s. f.oz.	Quicksilver, £73 10s. nom. ex-warehouse.
Iridium, £85 oz nom.	Selenium, 25s. nom. per lb.
Magnesium, 1s. 6d. - 2s. lb. according to quantity.	Silver (bar), 78¼d. f.oz. spot and forward.
Osmiridium, £30 oz. nom.	Tellurium, 14s. 4d. lb.
Osmium, £70 oz. nom.	
Palladium, £8 10s. oz.	

ORES, ALLOYS, ETC.

Bismuth	65% 10s. 10d. per lb. c.i.f. 50% 9s. 1d.
Chrome Ore —	
Rhodesian Metallurgical (lumpy)	£11 per ton c.i.f.
,, ,, (concentrates)	£11 per ton c.i.f.
,, ,, Refractory	£10 12s. per ton c.i.f.
Baluchistan Metallurgical ...	£11 11s. per ton c.i.f.
Magnesite, ground calcined ...	£25 - £26 d/d
Magnesite, Raw	£9 - £10 d/d
Manganese, Best Indian ...	(Nominal)
Molybdenite (85% basis) ...	(Nominal)
Wolfram (65%), U.K. ..	495s./510s. nom.
Tungsten Metal Powder (for steel manufacture) ...	31s. 9d. nom. per lb. (home)
Ferro-tungsten	29s. 9d. nom. per lb. (home)
Carbide, 4-cwt. lots	£30 18s. 9d. per ton
Ferro-manganese, home ...	£30 5s. 11d. per ton
Ferro-manganese, export ...	Nom.
Brass Wire	2s. 2¾d.
Brass Tubes, solid drawn ...	1s. 9¾d.

Mining Men and Matters

Mr. Alfred Baer has joined the board of New Broken Hill Consolidated.

Mr. J. A. D. Gillespie has been appointed a director of Lydenburg Gold Farms in place of Mr. S. G. Mennel, who has resigned.

Mr. George Hemmant has been appointed chairman of the Nigerian Electricity Supply Corporation in place of the late Major E. Seaborn Marks, and Sir Robert Renwick has been appointed a director of the Corporation.

Ruy de Sá Carneiro has been appointed a director of Angola Diamond.

Major-General Isaac Pierre de Villiers has been appointed a director of East Daggafontein Mines and South African Land & Exploration.

Mr. A. R. O. Williams has been elected a director of Taquah & Abosso Mines.

Mond Nickel Fellowships, 1950.—The Mond Nickel Fellowships Committee have announced the following awards for 1950: Mr. D. Alexander (University of Otago, New Zealand) to study industrial technique and the application of research to metallurgical control in Great Britain, with special reference to tinning, plating, enamelling and other surface finishing processes; Mr. F. R. H. Allon (John I. Thornycroft & Co., Ltd.); Mr. K. W. J. Bowen (Cambridge University), to study factors affecting the selection of materials for the construction of chemical and petroleum plant in the U.S.A. and Canada, with particular reference to the influence of research in this field; Mr. M. G. Gemmill (United Steel Companies, Ltd.) to study in Britain, U.S.A. and Canada, the manufacture, testing and application of steels for high temperature service; Mr. W. B. Hall (Nchanga Consolidated Copper Mines, Ltd., Northern Rhodesia), to study American and Canadian plant practice in the hydrometallurgy and electro-winning of base metals, with special reference to copper and its associate metals and to make a general study of mechanization and plant management in ore dressing and leaching plants.

The Mond Nickel Fellowships Committee will at a later date invite applications for awards for 1951. Full particulars of the Fellowships can be obtained from the Secretary, Mond Nickel Fellowships Committee, 4, Grosvenor Gardens, London, S.W.1.

Business Items

Mr. W. J. Byrne has been re-elected chairman of directors of the Commercial Bank of Australia for 1951.

The Rt. Hon. The Earl of Clarendon and **Sir William Henry Clark** have retired from the board of Barclays Bank (Dominion, Colonial & Overseas).

The death has been announced of **Mr. M. B. U. Dewar,** chairman of British Timken, Ltd.

Mr. A. C. Geddes and **Mr. J. T. Rymer** have joined the board of National Gas and Oil Engine in place of Mr. A. Ecarrodus, managing director, and Mr. E. M. Benjamin, who has resigned.

Dr. J. E. Holloway, has been appointed a member of the South African Board of Barclays Bank (D. C. & O.).

Sir Francis l'Estrange Joseph, Bart., has resigned from the Boards of the Midland Bank and of the Midland Bank Executor & Trustee Co., Ltd.

The Rt. Hon. Lord Milverton has been appointed a director of Bank of British West Africa Ltd.

Mr. A. M. McGrigor has joined the board of the National Bank of India.

Sir Archibald McKinstry has retired from the board of Babcock & Wilcox.

Mr. J. Muil has been appointed registrar and secretary of the Professional Engineers' Appointments Bureau, 9, Victoria Street, Westminster, S.W.1, in succession to Mr. H. J. Nichols who has resigned.

Mr. D. A. Smith has been appointed a director of Anglo-Iranian Oil.

Messrs. D. M. G. Sneddon, D. S. Burwood and **S. W. K. Morgan** have been elected directors of National Smelting.

The Earl of Verulam has accepted an invitation to become an additional patron of the Purchasing Officers' Association.

Mr. G. L. Webster and **Mr. R. S. Davenport** have been appointed to the board of Bowmaker.

British Thomson-Houston have announced that a large proportion of the 3,500 40-watt 4 ft. flameproof fluorescent lighting fittings ordered for the Eregli Coal Mines in Turkey has already been shipped.

The Mining Markets

Stock markets generally have maintained their cheerful outlook although turnover has decreased slightly in the latter part of the week. Gilts have declined due rather to lack of buyers than to any particular pressure of sales. The feature recently has been the boost given to Insurance shares by the increased interim dividend of the Sun Insurance Co.

Rising prices for gold in the so-called free market has caused some welcome activity amongst gold shares. This has been most strongly reflected in steady buying of shares in the Finance Group: Union Corporation, Anglo American Corporation and African & European, all of which show appreciable gains on the week.

Orange Free State shares followed no definite trend, President Steyn responded favourably at first to the high value obtained in its most recent borehole result but reacted later to its former price. The "Geoffries" quarterly report aroused no interest and the shares dropped to 18s. Similarly the highly payable reef developments at St. Helena and Welkom have had no appreciable effect on the respective prices.

In the miscellaneous group Cam & Motor continued their upward trend. There was also further demand for St. John del Rey as the yield is around 9 per cent on last year's dividend.

The West African market once again produced little interest, in comparison with other gold shares. This was due, firstly, to the fact that the United Kingdom registered companies are subject to penal British Taxation, and secondly, that they do not benefit from premium gold sales. Should the agitation of these producers persuade the Authorities to permit free dealing, as in South Africa, there might well be some activity in the low-graders. Bremang Gold Dredging gained 3d. probably for this reason, and also because this company is less likely to encounter labour difficulties than the underground mines. There is however unlikely to be any great movement in this market until the results of the Gold Coast elections are known.

The miscellaneous tin section proved itself to be a firm market. Jantar particularly improved on the prospects of increased earnings from columbite. The price of wolfram was increased to 500s. per unit and in consequence Beralt were once again in demand. Similarly Mawchi Mines were in favour owing to the increased value of its concentrates and to the likelihood that transport of the ore to world markets will become easier.

When the new account started on Wednesday the oil market continued its well deserved "innings." A surprising feature at the start was the drop in Ultramar which had finished the previous account in such demand. Since then however, this share has improved. The rise in petrol prices which was to offset the increase in tanker rates, had little effect on the market. As Anglo-Iranian runs its own tanker fleet this company must obviously benefit to an even greater degree than the other distributing companies.

The news that the Serai field had now augmented production to 5,000,000 tons annually caused British Borneos to go ahead, and consideration of the company's assets outside the Middle East aroused sympathetic demand for Anglo-Iranian.

Silver, lead and zinc reversed their experience of the previous week and encountered some demand. Exceptionally, Lake George declined on profit-taking. Australian shares generally were firm.

In the Diamond Group the increase in the final dividend of Anglo American Investment Trust from 20 per cent to 25 per cent was less than the market had hoped for. Certainly the distribution is not over generous in view of the fact that the estimated net profit is £1,706,000 against £1,059,000 for the proceeding year.

FINANCE	Price Jan. 24	+ or − on week
African & European	63/9	+8/1½
Anglo American Corpn.	7⅝	+⅛
Anglo-French	26/10½	+7½d
Anglo Transvaal Consol.	35/7½	−7½d
Camp Bird	14/9	−7½d
Central Mining (£1 shrs.)	45/7½	
Consolidated Goldfields	2⅛	
Consol. Mines Selection	35/-	+1/3
East Rand Consols	4/7½	
General Mining	6⅞	+⅛
H.E. Prop	41/3	+1/3
Henderson's Transvaal	10/3	
Johnnies	3½	+⅛
Rand Mines	7⅜	
Rand Selection	40/7½	+3/1½
Union Corporation	11⅛	+⅜
Vereeniging Estates	5⅛	+¼
Writs	33/9	+1/10½
West Wits.	2⅛	+⅛
RAND GOLD		
Blyvoors	50/-	
Brakpan	21/7½	+4½d
City Deep	3⅜	
Consol. Main Reef	2⅛	+⅛
Crown	5⅜	
Daggas	3⅛	+⅜
Dominion Reefs	2/-	
Doornfontein	27/6	−6d
Durban Deep	3⅛	
E. Daggas	28/9	
E. Geduld (4/- units)	2½	
E. Rand Props	3⅜	+⅛
Geduld	7⅜	+⅜
Grootvlei	40/7½	
Libanon	19/-	
Luipaards Vlei	23/3	+9d
Marievale	23/-	
Modderfontein B	6/-	+3d
Modderfontein East	2½	
New Kleinfontein	31/3	+7½d
New Pioneer	22/3	−9d
Randfontein	22/6	+6d
Robinson Deep	17/9	+3d
Rose Deep	36/10½	+2/6
Simmer & Jack	7/6	
Springs	11/7½	+7½d
Sub Nigel	4⅛	−⅛
Van Dyk	17/3	+6d
Venterspost	33/1½	−7½d
Vlakfontein	22/-	−1/-
Vogelstruisbult	27/9	+1/-
West Driefontein	5⅛	−⅜
W. Rand Consolidated	45/-	+7½d
Western Reefs	38/9	+1/3
O.F.S.		
Alpha F.S.A.	13/9	−9d
Blinkpoort	22/6	
Central Mining F.S.	5/6	
Freddies	16/-	−6d
Freddies N.	9/1½	+1½d
Freddies S.	9/6	
Geduld	2⅜	+⅛
Geoffries	18/-	−9d
Harmony	20/3 F.P.	−3d
Lydenburg Estates	11/3	
Middle Wits	21/3	−3d
Ofsits	45/7½	
President Brand	21/10½	
President Steyn	17/-	+1½d
St. Helena	34/4½	
U.F.S.C. & G.	10/9	−9d
Virginia Deb.	70	+2
Virginia Ord.	12/-	+3d
Welkom	43/1½	−7½d
Western Holdings	3½	
WEST AFRICAN GOLD		
Amalgamated Banket	2/1½	
Ariston	7/9	−1½d
Ashanti	33/-	−9d
Bibiani	13/-	
Bremang	4/3	+3d
G.C. Main Reef	4/-	
G.C. Selection Trust	10/-	−6d
Konongo	2/6	
Kwahu	4/9	
London & African Mng.	1/6	
Lyndhurst Deep	1/3	+1½d
Marlu	2/3	−1½d
Nanwa	1/-	
Taquah & Abosso	9/3	−4½d
AUSTRALIAN GOLD		
Boulder Perseverance	5/1½	−3d
Gold Mines of Kalgoorlie	17/-	+3d
Great Boulder Prop.	7/10½	−1½d
Great Western Consol.	1/6	
Lake View and Star	22/6	−3d
Mount Morgan	23/-	+3d
North Kalgurli	19/3 XD	−3d
Paringa	1/-	
Sons of Gwalia	13/3	−3d
South Kalgurli	10/3	
Western Mining	8/9	
Wiluna	11/3	−3d
MISCELLANEOUS GOLD		
Cam and Motor	34/4½	+1/10½
Champion Reef	9/6	
Falcon Mines	9/10½	+1/4½
Globe & Phoenix	23/6	
MISCELLANEOUS GOLD (contd		
G.F. Rhodesian	8/7½	−1½d
Londou & Rhodesian	5/7½	+1½d
Motapa	3/9	−3d
Mysore	6/3	
New Guinea	1/-	
Nundydroog	7/6	+3d
Ooregum	3/-	
Oroville	12/6	
St. John d'El Rey	31/3	+2/-
Zams	36/9	−1/3
DIAMONDS		
Anglo American Inv.	3⅛	+⅛
Cons. Diam. of S.W.A.	3½	+2/9
De Beers Defd. Bearer	57/6	−3d
De Beers Pfd. Bearer	17½	+⅛
COPPER		
Chartered	68/6	−3d
Indian Copper	5/3	+1½d
Messina	101/-	+2/3
Nchanga	6⅛	+⅛
Rhod. Anglo-American	57/3	+2/3
Rhodesian Selection	35/3	+1/1½
Rhokana	20½	+⅛
Rio Tinto	24	
Roan Antelope	19/10½	−4½d
Selection Trust	46/9 XD	−1/4½
Tanks	41/7½	−1/4½
Tharsis Sulphur Br.	55/-	
TIN (Eastern)		
Anglo-Burma	4/9	
Ayer Hitam	21/3	+7½d
Bangrin	26/-	+2/3
Gopeng	11/4½	+4½d
Hongkong	12/-	+9d
Ipoh	31/-	+1/7½
Kamunting	10/3	+1/-
Kepong Dredging	12/3	
Kinta Tin Mines	14/6	+6d
Kramat Pulai	4/6	
Malayan Dredging	22/6	+1/6
Pahang	13/9	+1/9
Pengkalen	9/6	
Petaling	11/4½	+1½d
Rambutan	18/1½	+1/3
Siamese Tin	16/3	+1/3
Southern Kinta	14/4½	+2/1½
S. Malayan	25/6	+1/-
S. Tronoh	22/3	+9d
Sungei Kinta	14/4½	
Tekka Taiping	11/-	+4½d
Tronoh	26/6	
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	12/6	+3d
Beralt Tin	22/9	+3/-
Bisichi	2/10½	+4½d
British Tin Inv.	17/1½	+10½d
Ex-Lands Nigeria	7/6	
Geevor Tin	15/6	+6d
Gold & Base Metal	3/10½	+4½d
Jantar Nigeria	6/9	+1/-
Jos Tin Area	11/-	
Kaduna Prospectors	5/6	
Kaduna Syndicate	11/6	+6d
London Tin	4/9	
Ribon Valley	1/3	
United Tin	1/9	+½d
SILVER, LEAD, ZINC		
Broken Hill South	53/-	+1/9
Burma Corporation	4/7½	
Consol. Zinc	32/9	+9d
Lake George	25/1½	−1/4½
Mining Trust	4/10½	
Mount Isa	37/6	+3d
New Broken Hill	32/9	+1/-
North Broken Hill	73/-	+1/3
Rhodesian Broken Hill	19/10½	
San Francisco Mines	67/3	+1/-
Trepca	3/7½	
MISCELLANEOUS BASE METALS & COAL		
Amal. Collieries of S.A.	2⅛	+⅛
Associated Manganese	73/-	−9d
Chinese Engineering	2/6	
C.P. Manganese	51/6	+3/6
Natal Navigation	5⅛	+⅛
Wankie	21/9	−6d
Witbank Colliery	4½	
CANADIAN MINES		
Dome	$31½	+1
Hudson Bay Mining	$114	+2
International Nickel	$74½	
Mining Corpn. of Canada	£6⅝	+⅛
Noranda	$145	−1
Quemont	£10½	+½
OIL		
Anglo-Iranian	5⅛	+⅛
Apex	45/7½	+7½d
Attock	25/-	
Burmah	58/1½	−7½d
Canadian Eagle Bearer	33/9	+1/6
Mexican Eagle	22/6	+1/3
Shell	4⅛	+⅜
Trinidad Leasehold	25/6	+1/-
T.P.D.	36/-	+6d
Ultramar	30/3	+9d

Company News & Views

Nigel Van Reefs Results

Nigel Van Ryn Reefs, which carries on a mining financial business and is interested in many of the principal South African, Western Australian and West African mining companies, also owns 27 per cent of the capital of Kalgoorlie Enterprise Mines, and the Champion mines in the Umtali district, Southern Rhodesia. During the year ended September 30, 1950, the company's gross revenue amounted to £17,490 against £13,115, and after meeting all expenses, net profit totalled £8,125 compared with £7,710 in 1949. To the net figure was added £9,375 brought in, £10,000 (£33,621) transferred from investment reserve and £562 arising out of provisions formerly made, no longer required, making £28,062 available compared with £55,277. Depreciation of quoted investments required £10,469 (£25,423), nil was transferred to general reserve (£4,496), and a dividend of five per cent, less tax (same), absorbed £7,785, leaving the carry forward slightly higher at £9,808 compared with £9,375 in 1949.

With regard to Kalgoorlie Enterprise Mines, total tonnage of ore broken amounted to 268,100 l.tons compared with 277,850 l.tons, and the chairman, Major Sir Cyril F. Entwistle, pointed out in this connection that the fall in production was due to an increase in costs consequent upon a dispute over underground contract rates early in 1950.

Sungei Way Dredging's Commitments

Owing to the heavy commitments incurred by Sungei Way Dredging for the year to June 30, 1950, in replacing their No. 1 dredge, which was dismantled by the Japanese and in rehabilitating No. 3 dredge, which it is hoped will be able to commence digging operations before the end of 1951, the company paid no dividend in respect of the year under review. However, in respect of the current year an interim dividend of five per cent, less tax, has been declared. Thus, throughout the year, with the exception of 14 days, No. 2 dredge was again the only operator. During that time 13.35 acres were dredged, representing a total yardage for the year of 1,226,791 cu. yd. (1,055,076 cu. yd.). The tin ore yield from these operations amounted to 323.14 tons against 258.29 tons in the previous year.

The financial results for the year reveal a rise in revenue from the sales of tin to $1,013,687, compared with $771,482. Mining costs were higher at $582,207 ($543,890), and net profit worked out at $400,871 ($225,976), out of which a dividend of ten per cent (same) was paid. The carry forward amounted to $1,224,190, which compares with $915,112 in 1949.

Falcon's December Quarterly Results

The quarterly report for the year ended December 31, 1950, of Falcon Mines, published earlier this week, revealed that combined profit from milling operations of the Sunace & Bay Horse Mines amounted to £12,930. At the Dalny Mine revenue earned during the quarter was £3,787 and the estimated cost of production including £1,143 charged against development, amounted to £3,809. It is further reported that continuous milling operations at the rate of some 2,500 tons per month are now in progress. Of the 1,602 ft. advanced during the quarter in the Dalny & Turk's Head section, 1,011 ft. on the Dalny section were on reef.

Expenditure during the quarter of Sunace mine was £1,444 and of the Bay Horse Mine £235, while in the case of Dalny, expenditure in all sections amounted to £61,176.

WESTMINSTER BANK LTD.

The Annual General Meeting of Westminster Bank, Ltd., will be held at the head office, 41, Lothbury, London, E.C.2, on February 14.

The following is an extract from the statement by the Rt. Hon. Lord Aldenham, chairman of the Bank, which has been circulated to shareholders with the report and accounts for the year ended December 31, 1950:

In recounting the year's changes in the directorate, Lord Aldenham paid a specially warm tribute to the Hon. Rupert E. Beckett, who during 1950 resigned from the chairmanship of the Bank, which he had held with such distinction for 20 years. Mr. Beckett still remains as a director.

The balance sheet shows that current, deposit and other accounts, at £815,000,000, were £7,000,000 higher than at the end of 1949. This increase was in some degree associated with the strong position of sterling and the consequent influx of money from abroad.

Advances to customers and other accounts increased on the year by £18,000,000 to £208,000,000. This upward trend was well spread and was a natural accompaniment of increased trade and industrial production.

The course of bank deposits and advances in 1950, taken in conjunction with increased production, suggests that there was no great addition to inflationary pressure; but the outlook for 1951 is by no means so favourable in this respect.

The accounts show a profit for the year of £1,471,031, an increase of £10,474 compared with 1949. Higher earnings from advances were partially offset by a reduction of income from investments. All expenses continued to rise, especially staff costs, which are of course by far the largest item. The profit has enabled the declaration of the same dividends as for last year, and again the placing of £600,000 to reserves for contingencies.

In the wider field of national affairs, the economic progress of 1950 must now be viewed in the light of the outbreak of war in Korea, which has been taken by all the freedom-loving nations as an indication that the cold war in Europe may at any time become a real war.

The other outstanding development of 1950 was the striking increase in the gold and dollar reserve of the sterling area, a change of fortune which led to the mutual agreement between the Governments of the United States and the United Kingdom that Marshall Aid to Britain should be suspended from January 1, 1951. It is difficult to exaggerate the success of the Marshall Plan, an act of international co-operation surely without parallel in time of peace.

The nations of Western Europe emerged from the war victorious but exhausted. They were without the means of subsistence, except at a very low level; their productive resources were badly impaired; their foreign trade, upon which they so largely depend for their livelihood, was reduced to a trickle. The Marshall Plan brought them sorely needed foodstuffs and other necessaries, and gave them heart for the tasks of reconstruction. It provided the materials with which they were able to restore their productive equipment, and so set in motion the cumulative growth of industrial production. Marshall Aid dollars supplied an international medium of payment permitting the resumption on a considerable scale of multilateral trade, which had been crippled by payments difficulties; they provided a backing for sterling, which was able to resume something of its former role as an international currency; and they permitted a considerable expansion of European trade through schemes for intra-European payments, of which the European Payments Union is the latest. It is to millions of American taxpayers that our thanks are chiefly due for the characteristic generosity with which they took up the burden of the Foreign Assistance Programme, a gesture which the British, who have little to learn in the capacity of taxpayers, are well able to appreciate.

The appearance of a surplus of dollars in the balance of payments of the sterling area and the consequent suspension of Marshall Aid to Britain do not mean that, quite apart from the strain of defence preparations, the economic recovery of this country is anywhere near complete. An examination of the causes of the improvement makes this clear. The devaluation of the pound in September, 1949, coincided, roughly speaking, with an upward turn in the level of business activity in the United States. A second strong influence was the heavy cut in dollar imports which the United Kingdom and the countries of the overseas sterling area were forced to make at the time of devaluation. At the end of June, 1950, a third factor was added—the outbreak of war in Korea. A new stimulus was given to the demand for raw materials, and the third quarter of the year ended with the reserve standing at rather more than double the figure at the time of devaluation, the sterling area having had a surplus of $400,000,000 in the first nine months of 1950 apart from Marshall Aid received. This fact encouraged the idea abroad that the pound might

be re-valued. The result was a sharp rise in the demand for sterling exchange for forward covering of purchases of sterling-area goods—an exact reversal of the conditions which prevailed immediately before devaluation.

At the end of 1950, the gold and dollar reserve of the sterling area had risen to $3,300,000,000, compared with $1,688,000,000 at the end of 1949. In the last quarter of the year there was an increase of $544,000,000, consisting of a surplus of $398,000,000 and Marshall Aid amounting to $146,000,000. The Treasury announcement confirmed that the forward purchasing of sterling mentioned above accounted for a large part of the surplus in the last quarter—probably over one-third.

Figures to show how the United Kingdom (as distinct from the sterling area) fared in 1950 in the effort to balance her dollar trade, are available for the first six months only. The overall balance of payments of the United Kingdom showed a surplus of £52,000,000 for the first half of 1950, compared with a deficit of £38,000,000 for the whole of 1949; and it seems probable that in the second half of 1950 the growth of exports and the increase in invisible earnings produced even better results than in the first half in respect of both our dollar balance and our overall balance.

While, therefore, genuine progress was made in 1950, much of the gain both in the sterling area as a whole and in our own position was attributable to exceptional factors, the removal of which would leave us once again short of dollars. We need a much more substantial dollar reserve before any revaluation of the pound should be considered.

The real test of our ability to earn our living in a competitive world has been postponed, not averted, by the present emergency, which has once again created "sellers' markets."

Internal conditions in this country during 1950 were more favourable than had been expected. The rise in the cost of imports due to devaluation was slower in reaching retail prices than forecasts had suggested. A large part of our increase in exports was provided by higher production; and we were thereby saved the feared reduction in the volume of consumer goods available at home. Personal incomes were kept fairly stable in accordance with the policy courageously initiated by Sir Stafford Cripps.

There must be a wider understanding that it is American charity that has enabled us for some years to live, as a nation, beyond our means. The national standard of living in future must be set by reference to the production index, rather than to the cost-of-living index. It will in fact be so set, whether we wish it or not.

Industrial production did increase notably during 1950 at a much greater rate than was anticipated in the Government's Economic Survey; but, by progress on both sides of industry, much more still can be achieved in this direction. Shortages of raw materials will check production in some industries in 1951; but recent reports from our branches all over the country refer to the under-manning of many industries. This under-manning and the needs of the Services should absorb any labour displaced by lack of raw materials. But the difficulty of persuading men displaced from one industry to take work in another is formidable, as is exemplified by the grave lack of manpower in the coal-mining industry.

During the year demand in several lines of business was curtailed, but there was a widespread impression of there being "less money about," but in fact the explanation of this impression lies in the changed directions of demand. Statistics of retail trade show that as a result, no doubt, of higher prices and the greater selection of goods on offer in the shops, money was drawn away from entertainments and semi-luxuries and spent on essential goods, such as groceries, clothing and house furnishings. The total amount spent by the public on their living expenses was probably greater than ever before.

The appointment of a strong Royal Commission, under Lord Justice Cohen, to inquire into the present system of direct taxation is a sign of a tardy recognition of the bearing of this matter on economic efficiency, although the exclusion of the level of taxation from the terms of reference makes the Commission's task more difficult.

It would seem that the only real contribution that the private individual can make towards the lowering of the level of taxation is to kill the idea, which is by no means confined to the lower income groups, that "the State will pay." We used to be told that the State purse was not inexhaustible; that is an understatement; the State purse does not exist.

We need to get public opinion mobilised against waste. As an instance of waste, Lord Aldenham quotes figures of estimates and expenditure on the National Health Service, and says there may be waste in administering the Service; there is certainly waste in the use made of it by the public. No Government can provide the nation with an economical Health Service except with the co-operation of the individual.

APEX (TRINIDAD) OILFIELDS

The 31st ordinary general meeting of Apex (Trinidad) Oilfields was held on Wednesday last in London, **Mr. Malcolm Maclachlan** (chairman and joint managing-director) presiding.

The chairman in submitting the accounts for the year ended September 30, 1950, said that oil revenue, after provision for development and contingencies, and after depreciation of fixed assets, amounted to £1,704,000. This included £408,000 in final settlement for oil delivered in prior years. In future, each year would reflect the revenue from the oil delivered during that year.

After providing £10,000 for London and New York expenditure, etc., and £1,025,000 for taxation in Trinidad and the United Kingdom, the net profit for the year was £669,000.

The directors recommended the payment of a final dividend of 1s. 3d. free of income tax per 5s. unit of stock, making a total dividend for the year of 1s. 9d. free of income tax per unit of stock.

The production for the year amounted to 2,833,000 bbl. of crude oil and 3,549,000 gallons of casing-head gasolene; deliveries of approximately these amounts had been made to the refineries.

During the year 82,371 ft. had been drilled in continuance of the programme to obtain production and to extend the tested areas of the property. Eleven wells had been completed in the main field and seven in the South Quarry area.

Interesting developments continued in the Synclinal zone. Well No. 481, where at the time of the last meeting only the lowest sand had been tested, was now giving good production from the main sand.

Three further wells had since been completed. Well 496 gave no production, although it might be deepened at some future date. Well 504 was giving excellent production from the largest sand body so far encountered, and was the outstanding development of the year. Well 511 had been tested during the last few days, but was not a commercial producer.

As the balance sheet showed, the company's financial position was one of great strength, which was necessitated partly by the very considerable decrease in the purchasing power of sterling, particularly as regards drilling and other oil equipment purchased in the United States. An equally important factor was the continually increasing cost of developing oil production in Trinidad.

The report was adpoted.

ANGLO AMERICAN CORPORATION GROUP OF COMPANIES

DECLARATION OF DIVIDENDS

NOTICE IS HEREBY GIVEN that dividends in respect of the year ended December 31, 1950, have been declared payable to shareholders registered in the books of the undermentioned companies at the close of business on February 9, 1951.

The dividends are declared in the currency of the Union of South Africa and become due on February 10, 1951. Warrants will be posted from the Head and London Offices on or about March 15, 1951.

The dividends are payable subject to the usual conditions, which can be inspected at the Head and London Offices of the Companies.

The Transfer Books and Registers of Members will be closed in each case from February 10, 1951, to February 17, 1951, both days inclusive.

Name of company (both incorporated in the Union of South Africa)	Dividend No.	Per cent	Rate of dividend per share in Union of South Africa currency	Effective rate non-resident shareholders' tax	Estimated profit after providing for taxation
(A) Anglo American Investment Trust, Ltd.	22	25	5s. per £1 share	4.575%	£1,706,000 (previous year £1,059,000)
(B) West Rand Investment Trust, Ltd.	6	6¼	7½d. per 10s. share	7.5%	£524,000 (previous year £343,000)

Notes.—(a) Final Dividend making with the Interim Dividend declared on June 15, 1950, a total of 7s. for the year.

(b) Final Dividend making with the Interim Dividend declared on June 15, 1950 a total of 1s. 1½d. for the year.

BY ORDER OF THE BOARDS,
ANGLO AMERICAN CORPORATION OF SOUTH AFRICA LIMITED.

London Office:
11 Old Jewry, E.C.2.
January 19, 1951

W. E. Groves,
London Secretary.

Nov.-Dec. Mine Returns

Gold

WEST AFRICA

Amalgamated Banket:
Nov.—48,258 tons yielded 7,607 oz.; profit £27,375.
Dec.—51,340 tons yielded 8,491 oz.; profit £39,420.

Ariston:
Nov.—27,000 tons yielded £110,782; profit £53,133.

Ashanti:
Nov.—19,500 tons yielded 15,783 oz.; net mines profit £89,143.
Dec.—19,500 tons yielded 15,793 oz.; net mines profit £87,884.

Bibiani:
Nov.—30,000 tons yielded 6,264 oz.; net mines profit £19,053.
Dec.—30,000 tons yielded 6,257 oz.; net mines profit £18,513.

Bremang:
Nov.—749,700 yds. from 4 dredges yielded 3,203 oz.
Dec.—838,800 yds. from 4 dredges yielded 4,029 oz.

Gold Coast Banket:
Nov.—8,380 tons yielded 2,561 oz.; profit £4,802.

Gold Coast M.R.:
Dec.—7,184 tons yielded 2,357 oz.; profit £3,816.

Konongo:
Nov.—3,980 tons yielded 2,572 oz.; profit £11,270.
Dec.—3,825 tons yielded 2,433 oz.; profit £9,666.

Marlu:
Nov.—37,650 tons yielded 3,168 oz.; profit £2,920.
Dec.—32,000 tons yielded 2,715 oz.; loss £1,943.

Taquah:
Nov.—24,000 tons yielded 5,392 oz.; profit £9,380.
Dec.—24,500 tons yielded 5,412 oz.; profit £9,002.

INDIA

Champion:
Nov.—11,400 tons yielded 6,236 oz.
Dec.—13,250 tons yielded 5,905 oz.

Mysore:
Nov.—12,400 tons yielded 5,008 oz. including 135 oz. from filter vat(s) and 93 oz. from slag.
Dec.—2,112 tons yielded 1,759 oz. including 926 oz. from special cleanup.

Nundydroog:
Nov.—16,510 tons yielded 4,147 oz. including 109 oz. from old tailings.
Dec.—16,554 tons yielded 4,129 oz. including 127 oz. from old tailings.

Ooregum:
Nov.—9,288 tons yielded 4,186 oz. including 1,222 oz. from plate steamings.
Dec.—9,173 tons yielded 2,406 oz.

AUSTRALIA

Boulder Pers.:
(Nov. 8-Dec. 5)—8,858 tons yielded 2,265 oz.
(Dec. 6-Jan. 2)—7,632 tons yielded 1,962 oz.

Central Norseman:
(Nov. 8-Dec. 5)—12,159 tons yielded 3,316 oz.

Creosus Prop.:
(Nov. 8-Dec. 5)—7,331 tons yielded 1,640 oz.
(Dec. 6-Jan. 2)—7,423 tons yielded 1,475 oz.

Golden Horse Shoe:
Nov.—44,129 tons of tailings yielded 654 oz. gold and 790 oz. silver.
Dec.—48,614 tons of tailings yielded 643 oz. gold and 689 oz. silver.

Gold Mines of Kalgoorlie:
(Nov 8-Dec. 5)—12,753 tons yielded 3,274 oz.

Kalgoorlie Enterprise:
(Nov. 8-Dec. 5)—3,457 tons yielded 1,042 oz.
(Dec. 6-Jan. 2)—3,813 tons yielded 1,140 oz.

Kalgurlie Ore:
(Nov. 8-Dec. 5)—14,827 tons yielded 3,999 oz.
(Dec. 6-Jan. 2)—14,024 tons yielded 3,503 oz.

Lake View & Star:
(Nov. 8-Dec. 5)—51,149 tons ore and 52,520 tons retreated tailings yielded 11,433 oz.
(Dec. 6-Jan. 2)—48,476 tons ore and 51,446 tons retreated tailings yielded 10,883 oz.

New Coolgardie:
(Nov. 8-Dec. 5)—3,875 tons yielded 1,753 oz.

Paringa:
(Oct. 25-Nov. 21)—7,381 tons yielded 1,159 oz.

Sons of Gwalia:
(Oct. 25-Nov. 21)—8,012 tons yielded 2,220 oz.

South Kalgurli:
(Nov. 8-Dec. 5)—8,090 tons yielded 1,802 oz.
(Dec. 6-Jan. 2)—7,766 tons yielded 1,496 oz.

MISCELLANEOUS

Brit. Guiana Cons.:
Nov.—57,057 cu. yds. dredged yielding 362 oz.
Dec.—76,389 cu. yds. dredged yielding 598 oz.

Bushtick:
Nov.—11,500 tons yielded 1,290 oz.; profit £308.
Dec.—11,700 tons yielded 1,289 oz.; loss £152.

Cam & Motor:
Nov.—21,000 tons yielded £56,155, profit £24,986.
Dec.—21,000 tons yielded £56,854, profit £24,901.

Clutha:
(Oct. 28-Nov. 24)—dredge worked 389 hours yielding 405 oz.

Frontino:
Nov.—6,602 tons yielded 4,149 oz.
Dec.—7,214 tons yielded 3,578 oz.

Martha:
(Nov. 27-Dec. 31)—13,404 tons yielded 3,066 oz. gold, 50,980 oz. silver.

Motapa:
Nov.—22,600 tons yielded 2,310 oz.; profit £5,543.
Dec.—23,000 tons yielded 2,219 oz.; profit £4,020.

Rezende:
Nov.—7,300 tons yielded £13,141, profit £1,448.
Dec.—6,700 tons yielded £13,427, profit £1,464.

Rosterman:
Nov.—3,688 tons ore and 524 tons sorted waste yielded 1,084 oz.
Dec.—3,608 tons ore and 603 tons sorted waste yielded 1,134 oz.

Saudi Arabian:
Nov.—5,451 tons assayed 1,366 oz.; profit £40,201.

St. John D'el Rey:
Nov.—34,800 tons; value of output £235,038 including £1,690 from retreated roasted sands.

Thistle-Etna:
Nov.—4,900 tons yielded 506 oz.
Dec.—5,000 tons yielded 516 oz.

Wanderer Cons.:
Nov.—29,000 tons yielded 2,063 oz.; profit £1,046.
Dec.—25,500 tons yielded 1,942 oz.; profit £468.

Coal & Miscellaneous Base Metals

Amal. Collieries:
Nov.—525,988 tons coal. **Dec.**—506,371 tons coal.

Apex Mines:
Nov.—88,727 tons coal. **Dec.**—83,226 tons coal.

Broken Hill South: (Nov. 26-Dec. 30)—24,960 tons ore (Assaying 73.5 per cent lead, 52.1 per cent zinc and 47.1 silver) yielded 4,127 tons lead conc. and 5,330 tons zinc conc.

Dundee Coal: Nov.—47,948 tons. **Dec.**—43,202 tons.

New Broken Hill: (Oct. 22-Nov. 18)—18,335 tons ore (Assaying 8.7 per cent lead, 13.5 per cent zinc and 2.1 oz. silver), yielded 1,947 tons lead conc. and 4,376 tons zinc conc. **(Nov. 18-Dec. 15)**—15,889 tons ore (Assaying 10.0 per cent lead, 12.5 per cent zinc and 2.5 oz. silver), yielded 1,947 tons lead conc. and 3,518 tons zinc conc.

North Broken Hill: (Oct. 22-Nov. 18) — 31,963 tons ore (Assaying 13.4 per cent lead, 10.9 per cent zinc and 7.1 oz. silver), yielded 5,839 tons lead conc. and 5,926 tons zinc conc. **(Nov. 19-Dec. 31)**—41,293 tons ore (Assaying 14.0 per cent lead, 11.1 per cent zinc and 7.3 oz. silver), yielded 7,936 tons lead conc. and 7,804 tons zinc conc.

Rhodesia Broken Hill:
Nov.—1,850 tons zinc and 1,150 tons lead.
Dec.—1,135 tons zinc and 1,830 tons lead.

South African Coal Estates:
Nov.—177,594 tons coal. **Dec.**—162,826 tons coal.

Springbok Colliery:
Nov.—74,924 tons coal. **Dec.**—66,092 tons coal.

Vryheid Coronation:
Nov.—51,302 tons coal and 12,678 tons coke.
Dec.—49,163 tons coal and 13,179 tons coke

Wankie Colliery:
Nov.—182,842 tons coal sales and 8,514 tons coke sales.

Witbank Colliery:
Nov.—125,687 tons coal. **Dec.**—122,669 tons coal.

Zinc Corporation: (Oct 22-Nov. 18)—38,804 tons ore (Assaying 19.0 per cent lead, 12.6 per cent zinc and 3.1 oz. silver), yielded 9,370 tons lead conc. and 8,318 tons zinc conc. **(Nov. 19-Dec. 15)**—37,305 tons ore (Assaying 15.1 per cent lead, 10.7 per cent zinc and 3.1 oz. silver), yielded 7,133 tons lead conc. and 6,808 zinc conc.

(The tin returns—Malay, Nigeria and Miscellaneous—will appear next week)

OBITUARIES

MR. G. GOLDTHORP HAY

On January 18, Mr. G. Goldthorp Hay, former chairman of Lake View and Star, and president of Yukon Consolidated Gold Corporation, died at Bournemouth, aged 81.

Mr. Hay was first elected to the board of Lake View and Star in 1929, becoming its managing director two years later and its chairman in 1944. Last year, for reasons of health and age, he rtired from the board.

He was also formerly on the boards of several other companies, including Mill Close Mines and Anglo-Maikop Corporation.

FRANK L. BAER

We regret to report the death, at the beginning of last week, of Mr. Frank L. Baer, so well known on the London Metal Exchange and chairman and joint managing-director of Metal Traders Ltd.

Mr. Baer, like other men influential in the London metal trade, received his early training in the firm of Henry R. Merton & Co., in pre-war days. When that firm was taken over by the custodian of enemy property and subsequently dissolved, in association with Balfour Williamson & Co., he formed the firm of Metal Traders Ltd. in 1920, eventually becoming chairman and joint managing-director. He was for many years on the committee of the London Metal Exchange and later deputy chairman. He was one of those instrumental in the re-opening of the London Metal Exchange for dealings in tin. He was 66 at the time of his death, and had been associated with the metal trade for over 40 years.

J. H. C. E. HOWESON

The death occurred at his residence, Brasted Place, Brasted, Kent, on January 8 of Mr. John Henry Charles Ernest Howeson at the age of 66. Though it is now over 15 years since the late Mr. Howeson retired from City business the impress of his constructive abilities and breadth of imagination are still prominent in the tin industry and may very likely have moulded it permanently.

After a business career in India, in which his firm was particularly prominent in jute, he returned to this country soon after 1921 and busied himself in organizing tin producers on the general theory that if arrangements could be made to stockpile production in time of depression a stable level of remunerative prices could ultimately be secured. He had many groups studying the tin mining situation in Burma, Malaya, the N.E.I., Bolivia, Nigeria and Cornwall, and he formed various big companies of which the Anglo-Oriental Corporation became the most important. He purchased the Penpol smelter at Bootle for a sum reported to be in the neighbourhood of £225,000 and reconstructed it.

His main achievement was the formation of the International Tin Restriction Organization, for which he eventually won the support of the late Don Simón Patino. The history of this organization is too well known to need recapitulation here. It was undoubtedly successful in its main objective of raising the tin price through restricting output by periodic quota regulations. But one effect now being seriously felt was the stoppage of prospecting on fresh ground, especially in Malaya. He was successful, however, in establishing the idea that tin production must be controlled in the interest of the less economic producers, on the theory that once many mines went out of production owing to low prices, many of them would never be restored to life. We have seen in the last year or two renewed efforts being made by governments, especially by the British Government, to re-create international restrictive control, but without the inspiration of his remarkable personality, thus far without any success.

A Correction

In the note which appeared under the heading "Tin—Too Much or Too Little?" in "Notes and Comments" last week there were unfortunately several lines of type misplaced, so that three of the paragraphs did not read. In the paragraph dealing with consumption of tin in 1950 it was stated that consumption trends in the U.K., Canada and Germany, were tending upwards, and this paragraph should have gone on to state that "on the basis of the latest published figures, world consumption in 1950 must have exceeded 150,000 tons."

Two paragraphs further on it was stated to be improbable that world mine production in 1951 could exceed 170,000 tons, and the sentence should have gone on to read "and at this figure excess of production over consumption promises to be less than last year and may even disappear."

The first two lines of the following sentence should have read "Malayan ore reserves in sight are to-day estimated, perhaps a little pessimistically, at 11 years' production."

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